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May 1989
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FEATURES

THE "SOUND" OF MUSIC
By Tim Tully 16
If you and your Amiga want to make beautiful music together, you'd better be aware of the two subjects covered in our music feature: What are the capabilities—*and* limitations—of the Amiga's sound system? Which products on the Amiga music market capitalize on those strengths, and which improve upon those deficiencies?

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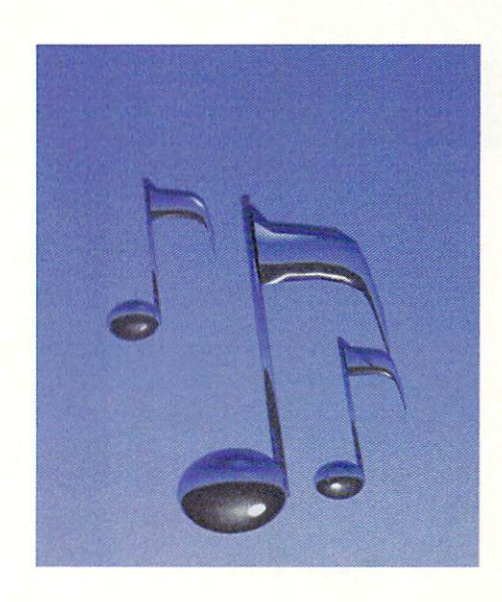
THE SQUEEZE PLAY *By Jonathan Horne* 41
If you want to take full advantage of what the communications networks have to offer, we suggest you get acquainted with these four popular "archiving" utilities. Learning how to compress your files for easy downloading and uploading will save you time, disk space, *and* lots of money on your phone bills.

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NOTE: BASIC BY THE NUMBERS. Because of space demands, we regret we could not bring you the conclusion of Bob's Amiga Basic data-manipulation tutorial. The final installment—including the full Address Book program listing—will appear next month.



While Amiga music is our feature inside this month (see "The 'Sound' of Music" on p. 16), we're featuring another of the Amiga arts—graphics—on the outside. Our Amiga-generated Music cover was created by AmigaWorld *Assistant Art Director Roger Goode, who ray-traced the image using Sculpt-Animate 4D. Special thanks to Brian McCullough, Bruce Granofsky, and Byte by Byte for their help in producing the image. And additional thanks to Philadelphia Video Lab for producing the hardcopy.*

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COVER ILLUSTRATED BY ROGER GOODE

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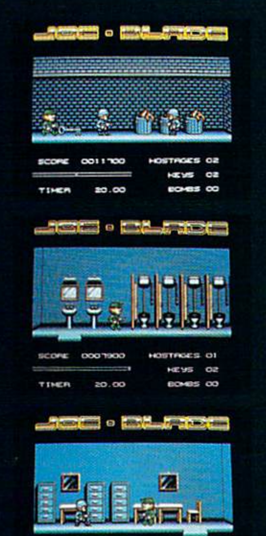
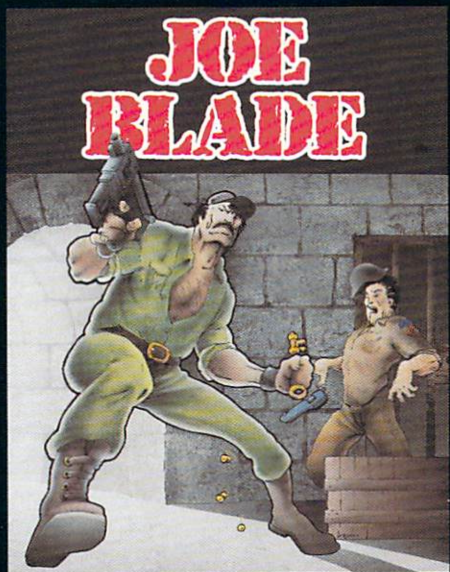
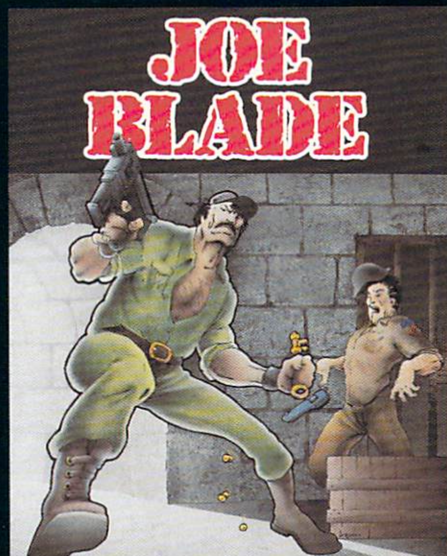
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AmigaWorld (ISSN 0883-2390) is an independent journal not connected with Commodore Business Machines, Inc. *AmigaWorld* is published monthly by IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458. U.S. subscription rate is $29.97, one year; $46.00, two years; $64.00, three years. Canada $38.97 (U.S. funds), one year only. Mexico $38.97, Foreign Surface $49.97, Foreign Airmail $84.97 (prepayment is required on Foreign Surface and Airmail subscriptions in U.S. funds drawn on U.S. bank). All rates are one-year only. Second class postage paid at Peterborough, NH, and at additional mailing offices. Phone: 603-924-9471.

Postmaster: Send address changes to *AmigaWorld*, Subscription Services, PO Box 58804, Boulder, CO 80322-8804. Nationally distributed by International Circulation Distributors. *AmigaWorld* makes every effort to assure the accuracy of articles, listings and circuits published in the magazine. *AmigaWorld* assumes no responsibility for damages due to errors or omissions.

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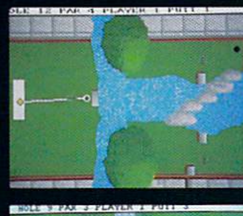


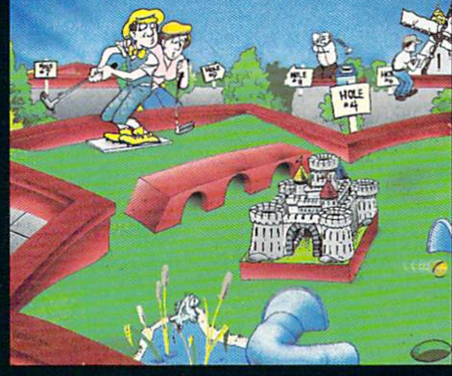
Six world leaders are kidnapped and only one man alive can rescue them – Joe Blade! To save them Joe must penetrate the fortress and its 127 rooms, locate the keys, free the hostages, disarm and reset the bombs, and then escape in time!

The detailed graphics and sound along with the great gameplay make this... "definitely one for the collection..." – **ZZAP** (silver medal award winner!)

"Joe Blade is an exceptionally well programmed product..." **Ahoy!'s AmigaUser**



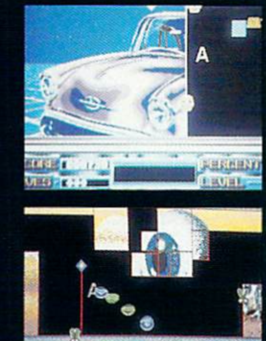
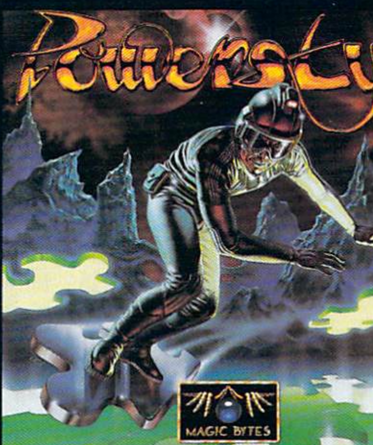
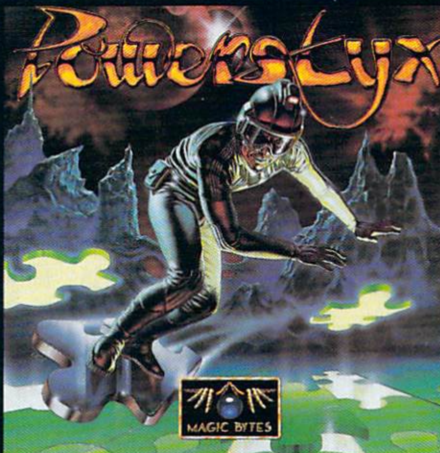


Hole-In-One Miniature Golf is the best mini-golf game made! DigiTek Software has created a game so simple to play that the entire family can enjoy it together. Hole-In-One is pure fun! Complete with classic miniature golf holes as well as lively fantasy holes.

"Hole-In-One...is definitely the best game on this popular pastime ever published for the home computer" – **Video Games & Computer Entertainment**

"Hole-In-One...is quite simply the best miniature golf computer program ever designed – for home computer or arcades" – **Commodore Magazine**

Rated as one of the BEST of 88! by **Ahoy's AmigaUser** and **Video Games & Computer Entertainment.**

This is an arcade style game in which you must capture sections of the screen to gain points and see the mystery picture. Sound easy? It would be except for the roving lazer, the chomping skulls, ripping scissors and other equally deadly icons that pursue you. The excellent sound, animation, graphics and gameplay all contribute to making this one of our best and most popular arcade games!

"Powerstyx takes the popular thinking mans arcade game QIX and embellishes it tremendously making a superior version of the original" – **Commodore Magazine**

Amiga versions shown here.

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ZEITGEIST

Amiga music, like multitasking, is easy to take for granted until you try another machine.

THERE IS MORE music in our lives now, in 1989, than at any other time in the history of human ears. Just about everything we do involves music. Groups that are outraged about various subjects like to point out that the average American sees *x* number of murders or *x* number of semisexual references or whatever on television per week. I would like to see statistics on the number of tunes we hear on television per week. If there are nine or ten commercial breaks per hour with at least two commercials per break, then that is a minimum of about 25 tunes per hour. Depending on the program you're watching, music probably plays throughout, and every show has a theme song or two. So, easily we hear hundreds (if not a thousand) tunes per week on TV. Granted, most of this "music" is not Grammy-winning material, but we hear it all the time.

Beyond TV, you have elevator music, restaurant music, shopping mall music, dentist's office music, bank music, supermarket music, being-put-on-hold music (I suppose most of these are forms of Muzak), doorbells, many of the children's toys these days, greeting cards, Christmas ornaments, fasten-your-seat-belt music (if it isn't just a buzz), bar music, arcade games and pinball music, jukebox music, movie music, halftime music (and don't forget the national anthem at the start, or the ubiquitous, insipid organ music at baseball games), computer game music, and all the other incidental music that we don't listen to intentionally.

All this doesn't include the music that we do actually choose to listen to. MTV, records, tapes, CDs, radios at work, in the car on the way to work, at play, Walkmen, live concerts, etc. So we are inundated with music every day. How much of it do we make ourselves? Do you sing, whistle, or hum? Do you play an instrument? And, since this is an Amiga magazine, do you use your Amiga to make music? Would you like to?

Our feature this month is Amiga music and sound. What it is, how it is done, and what sorts of hardware are out there. Music software and hardware has come a long way in the past year, and whether or not you plan to be composing great rock songs and arias yourself, we all benefit. Someone out there is going to be creating music and sounds for the Amiga.

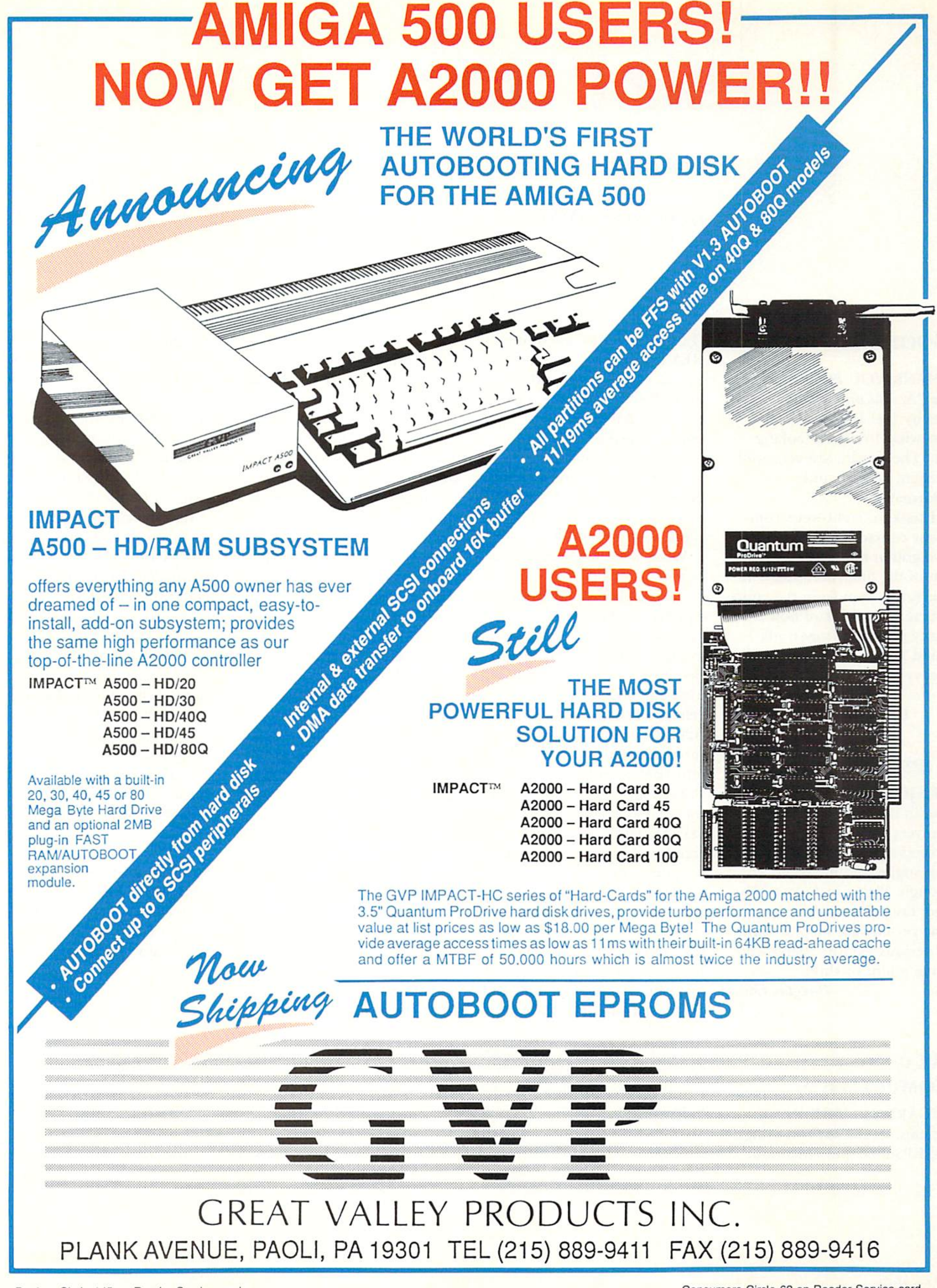
Last year I asked the question: "Where is all the Amiga music?" It is half here and half yet-to-come, but Amiga music, like multitasking, is easy to take for granted until you try another machine. Take just about any Amiga game and compare the sounds and music with the same game on any other computer and you will remember. Like the high-quality graphics that have come to be the standard for Amiga products, great music and sound effects are now standard equipment, too.

There is a similar situation in small video studios. Since most people are used to very high-quality television (million-dollar 30-second burger commercials, etc.), just about anything that is locally produced stands out as being amateurish. When the quality of the production reaches a certain level of excellence, then it blends in with all the other television we see. This is why some commercials use jittery, "unprofessional" techniques—because we notice them. If you are good enough, you become invisible.

There was a time, not lon ago, when any sounds tha computer made were notew thy. Like a child's first drawings, they were crude, but we forgave the lack of sophistication. The Amiga is more like a high-school student. What comes out is so much better than what a child can do, but it still isn't what an adult human being could do. Fortunately, in the Amiga, we have a machine that is a good deal farther along the road than any other.

As computers get closer to matching reality, the standards get tougher and the final results become invisible. Eventually, computer graphics, sound, speech, animation, video, music, and even thought will match and even surpass reality. Then we can take the technology side for granted and just criticize the creative.

Guy Wright



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Consumers Circle 62 on Reader Service card.

REPARTEE

Comments, complaints, and concerns

from AmigaWorld *readers.*

Good Graphics

THANK YOU FOR publishing the "Accent on Graphics" series by Joel Hagen. They're just what I've been looking for! The articles are very well written, helpful, and informative.

I took an eight-week computer course for $195, and I've gotten more use and fun out of the first two articles in this series than from the entire course. Just think of how many issues of *AmigaWorld* I could have bought with $195 (heavy sigh!).

Grace Overweel
Edmonton, Alberta, Canada

Tips & Tricks

I ENJOYED THE games section in the February 1989 issue very much ["The Game Preserve," p. 60]. I do have one suggestion for you, though. Please include a "Tips and Tricks" section for games! The reviews are helpful, but *all* serious gamists would welcome a hint or three.

Douglas Chase
Troy, MI

Heavy Competition

REGARDING THE NEW A2500s, let me say two things: IBM PS/2 80 and Macintosh IIxt. Let me add one more: NEXT. Come on Commodore, get off your behind and catch up with the rest of the industry! Your A1000 was a revolutionary machine, but your A2000 was a timid side step. The A2500 is at least a couple of years behind IBM and Apple, and lagging behind NEXT by even more.

When the A1000 first came out, I was instantly seduced by its incredible graphics and animation capabilities. I bought one as soon as they became available, but soon my business needs outgrew its capabilities, and I eagerly awaited the release of the new model. The A2000 was a total disappointment. Except for expandability and IBM compatibility (although an AT clone is a much more powerful and economical alternative), it offered no significant improvements. It contained the same processor running at the same slow speed, the same resolution, the same flickering display, and (like the new A2500s) communicated with the outside world in 16-bit chunks. It simply was not powerful enough for my needs. Business realities made the Macintosh II the only logical choice for me. While it is true that the A2000 is less expensive than its competition, if I were to bring it up to the level of my Mac II, I would have to buy a 68020 coprocessor card with a math chip (over $1000), some 32-bit memory (over $1000), a flickerFixer ($595), and a high-resolution monitor ($2000). Suddenly the Amiga doesn't seem so cheap, does it?

I still use my Amiga for animation scripts, and Deluxe-Paint II and Sculpt/Animate 3D are still my favorite programs, but when it comes to powerful and flexible desktop publishing, my Mac II and LaserWriter are unbeatable.

Unless Commodore gets with it, it will continue to lose power users to Big Blue and Apple. With Sun and Apollo substantially lowering the prices of their entry-level workstations, and NEXT executing a coup in the computer industry (striking directly at the Amiga's natural market), Commodore must develop an aggressive marketing strategy, or lose its present market niche and forget any plans of penetrating the corporate world.

Gerardo Arnoldo Tarango
Washington, DC

Gama I

I'VE HEARD REPORTS that Commodore is working on an Amiga-based game machine. If this is true, I hope they will not end up calling it the Amiga 100 or such. Commodore has had to work hard to overcome its game-machine image in order to build respectability for the Amiga. Let's not throw it all away by hanging the Amiga name on a cartridge-based game machine. One rumor I've heard is that the game machine will be called the Gamma One (Gama I)—the letters of Amiga scrambled. That sounds a lot better, Commodore.

Bob Krull
Toronto, Ontario, Canada

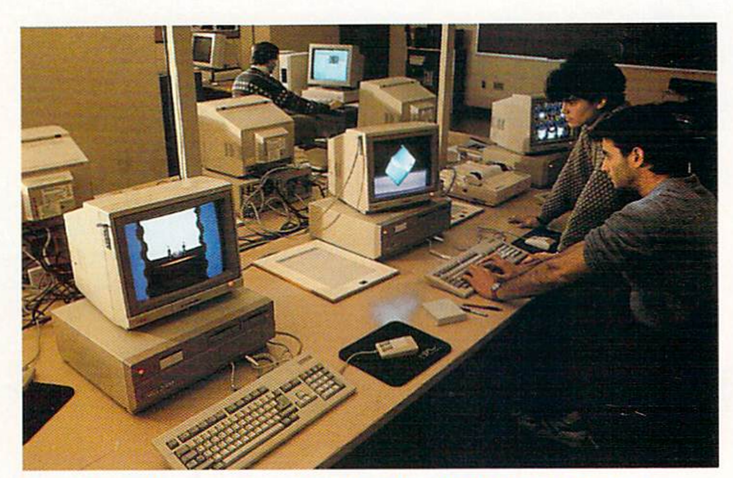
Not to worry. The word from Commodore at CES in Las Vegas last January was that the game machine project has been nixed. Nintendo's dominance in that area might have had something to do with the decision.

—Editors

Send your letters to: Repartee, *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458. Letters may be edited for space and clarity. ■

NOTEPAD

Compiled by Linda Barrett


The Rutgers University computer lab offers 30MB of animation power from six Amigas (foreground) and two Suns (background).

Art on the Move

RUTGERS UNIVERSITY'S Camden campus is undergoing an arts revival. Basking in the glow of its new three-dimensional animation computer lab powered by two Suns and six Amigas, the Fine Arts Department is drawing students from all disciplines from business to computer science.

"The students are very enthusiastic. This is the first time they've worked with animation. It's an exciting environment to be teaching in," says Assistant Professor Maria Palazzi, a computer graphics and animation specialist.

As co-creator of the lab with Art Department Chairman John Giannotti, Palazzi has good reason to be excited. Using a grant from the New Jersey Department of Higher Education, Palazzi has amassed two Sun Microsystems 3/60s with 12MB of memory and a 280MB hard disk, six Amiga 2000s each with dual floppies, 3MB of memory, and an Easyl graphics tablet (Anakin Systems). The computers are networked together with NFS (Network File System). Students can use the Amigas as individual graphics engines or as an interface to the Suns. The lab also houses an impressive collection of Amiga software, including DeluxePaint II (Electronic Arts), Digi-Paint (NewTek), Kara Fonts (Kara Computer Graphics), PageFlipper (Mindware International), the Photon Video series (MicroIllusions), and Sculpt-Animate 4D (Byte by Byte).

To transform student animations into broadcast-quality videos, the lab provides a Lyon/Lamb Mini-Vas single-frame controller, a Magni 4000 encoder, and two Sony ¾-inch video decks with an editing controller.

To Giannotti, the lab represents only the beginning of a larger project. He would like the Camden campus's lab to become southern New Jersey's computer graphics animation center. Considering the college's arsenal of equipment, he is well on the way to achieving his goal. *—LJB*

Singing a Different Tune

LAST WINTER'S NAMM (National Association of Music Merchants) show in Anaheim was huge, hectic, and staggeringly diverse. For a change, music software exhibitors were out in record numbers, with the Amiga well represented. Commodore led the way with its first NAMM appearance.

Down the hall, Dr. T's Music Software multitasked its **editor/librarian** for the Kawai K5 synthesizer, **The Copyist**, and **KCS 1.6 Level II**, a more powerful version of the KCS 1.6 sequencer. The company is also working on an Amiga version of **The Orchestrator**, a patch organizer.

Sound Quest released **editor/librarians** for the Kawai K1 and Oberheim Matrix 6/1000 synthesizers. Music Soft debuted **editor/librarians** for the D-110 (Roland) and its little brother, the MT-32.

Passport previewed Amiga versions of its popular **Master Tracks Pro 3.0** sequencer and has **Master Tracks Jr.** under development.

MIDI Mouse Music showed a sample generation program, **Wave**. The program supports FM, Additive, Subtractive, and Granular synthesis.

On the hardware end, IMC demonstrated **Midia**, a multi-timbral sound generator/MIDI interface that sits under the monitor and connects to the serial port. It utilizes sound chips from the Yamaha FB-01 and the Roland JX to produce synthesized sounds, and ROM-resident samples for drums.

In the past, the Amiga has lagged behind the Mac and Atari in the music software field, but this show was a serious turnaround. The pro music market is beginning to realize that the Amiga is a force with which to be reckoned. ***—Stephen Quinzi***

Please Forward to . . .

Several items were listed inaccurately in the Hardware Buyer's Guide (March '89). Please note the correct addresses and telephone numbers that follow:

Bill's Boards is located at 9528 Miramar Rd., Suite 181, San Diego, CA 92126, 619/486-0908.

Great Valley Products can be found at 225 Plank Ave., Paoli, PA 19301.

Products credited to Jaytron are actually made by Flexible Data Systems. Contact them at 10503 Forest Lane, Suite 148, Dallas, TX 75243, 214/437-5381.

Supra Corporation's telephone number is 503/967-9075. *—JJ*

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Professional ScanLab

Looking good in detail.

By Louis R. Wallace

IF YOU WANT high-quality print graphics, your choices are limited. Most Amiga video digitizers size images to fit on your monitor's screen, and in doing so, limit image resolution to a maximum of 640×400 (plus overscan). While laser printers can deliver up to 300 dots per inch (dpi), printing on a dot-by-dot basis to get the highest-quality output produces a graphic of just 2×1¼ inches at most. Some software allows you to scale graphics, but no matter how much you enlarge an image, your print will never show any more detail than was contained in the original screen display.

ASDG's Professional ScanLab, however, lets you achieve large, high-quality print output. A hardware-and-software interface to Sharp Electronics' JX-300 and JX-450 color scanners, ScanLab can create virtual IFF images far larger than the Amiga's screen display. With it, you can digitize graphics ranging in size from one inch square to 11.7×17 inches in resolutions of 30 to 300 dpi. (The JX-300 has a maximum scanning area of 8.5×11, according to Sharp, but the JX-450 accommodates oversize documents and, with an optional mirror attachment, transparencies of up to 8.3×11.7.)

Elephantine My Darling

Large, high-resolution images require great amounts of memory and storage space. Just one square inch of graphics occupies 24K at 75 dpi, while at 300 dpi it requires an incredible 371K. (An 8×10 picture requires 80 times the square-inch value!) It is no surprise, then, that an A2000 with at least two megabytes of RAM is the bare-bones requirement for using Professional ScanLab. ASDG states, however, you need a minimum of eight megs to make full use of the scanner, and although you *can* work from a floppy-based system, a 40MB hard disk should be considered standard equipment. If you plan to save pure RGB data, you will need a larger-capacity drive.

The ScanLab package consists of ASDG's Twin-X GPIB (IEEE) Input/Output board and software (the scanners themselves are sold separately). The board mounts into any of the Amiga's 100-pin expansion slots, and connects to the scanner via the supplied two-meter cable.

You need a fair amount of desk space to accommodate the scanner. I tested the JX-450, which weighs 44 pounds and measures approximately 21×22×7 inches. Because the upper portion of the machine moves from side to side during the scanning process, you cannot place the unit against a wall or another piece of equipment.

The ScanLab software is remarkably powerful. One utility lets you install the entire program onto any drive or directory. To start the system, simply turn on the scanner and click on the ScanLab icon.

You must master each of the program's modes—Trial, Fine, and Process—to fully utilize the scanner. You begin in Trial mode by clicking its gadget (a gadget for each mode appears at the bottom of the screen).

The Trial mode scan gives you a rough idea of how your image will look. Place your original picture on the scanner's glass, and select a size for the initial scan from the Trial menu. For the JX-450, there are eight choices ranging from 8.5×5.5 inches to 11.7×17 inches. The Trial scan uses a single bitplane, which gives you a crude black-and-white display in a few seconds. Very large scanned images will not fit entirely on the display screen, but with arrow gadgets, you can scroll to see the various sections. ScanLab's scrolling action is the fastest and smoothest I have seen on the Amiga—even in HAM (Hold-And-Modify) mode—and it is free of the annoying flash you often see when scrolling with other programs.

Zeroing In

Once you have an image on screen, you can more precisely define an area by drawing a box around it with the mouse (this is accurate to about one-hundredth of an inch). If you then click on the Accept Subrange button, the scanner will quickly digitize only that area. You can repeat this process as many times as you like.

When you have defined your area satisfactorily in Trial mode, it is time to move to Fine mode, where a menu offers a variety of scan formats. In addition to the one-bit (monochrome) mode, you can scan in eight-bit gray scale (which produces a high-quality black-and-white image), a three-bit (eight-color) mode, and the 24-bit color default format

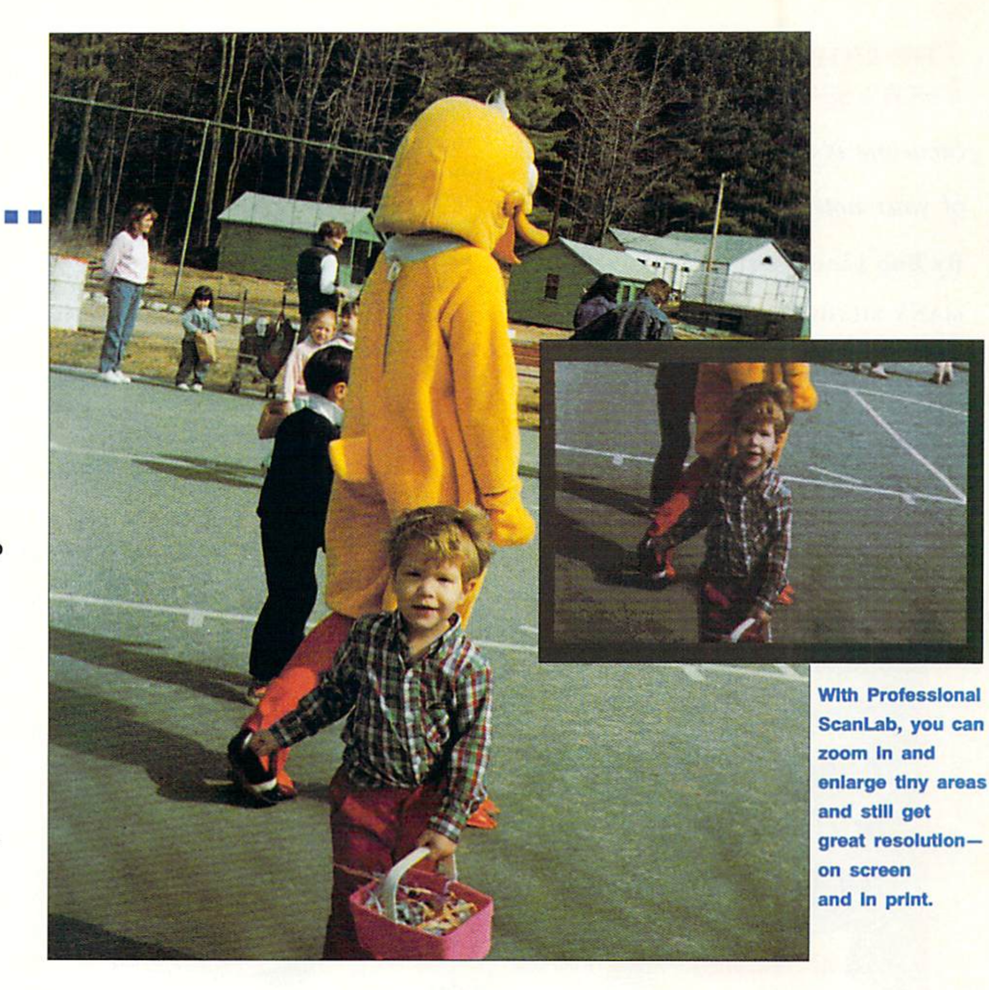


wherein ScanLab processes your image using 24 bits per pixel. Because the Amiga can use a maximum of six bits per pixel (HAM) for display, the ScanLab software translates 24-bit images into HAM mode format for screen representation. Depending on image size, this can take a few seconds to a minute. By clicking on the Edge button, you can choose from several edge-emphasis options; these can heighten fine detail or soften edges.

In Fine mode, the program displays the current resolution in dpi. You can alter it by clicking the Custom Resolution button and defining another, or by choosing from a menu of four options (320×200, 320×400, 640×200 or 640×400) and letting ScanLab calculate the dpi required for the picture.

As with Trial mode, you scroll around the virtual screen using arrows. If you decide to scan a different segment of the picture you must return to Trial mode. If you are satisfied with your selection, however, you can click on the Process button and enter the third mode.

The Process menu allows you to perform image processing on any 24-bit graphic in memory. For example, you can separate an image into as many as seven colors, or have the software automatically separate and save the picture to disk in either three- or four-color format. You can also convert the loaded image to different screen formats, including 16- and 32-color displays. A high-speed reduction option allows you to shrink the picture to one half, quarter, or eighth of the original size, and by selecting the Adjust button you can alter contrast and brightness. Finally, the PScript utility converts pure RGB data into a Postscript file so you can output to a Postscript-compatible printer.



With Professional ScanLab, you can zoom in and enlarge tiny areas and still get great resolution—on screen and in print.

Where Do We Go From Here?

The images Professional ScanLab produces are very high quality, and in some cases equal to those generated by Digi-View (NewTek). ScanLab, however, can produce far larger images, and can zoom in to much smaller areas. I was able to import large graphics into Deluxe PhotoLab's (Electronic Arts) Paint program for editing and manipulation. DeluxePaint II accepts some virtual screens (not Extra_Halfbrite or HAM). These are the only programs I know of, however, that directly accept larger-than-screen-size ScanLab output, although Gold Disk's 2.0 release of Professional Page promises support.

I am extremely impressed with the caliber of the ScanLab package and the images Sharp's scanner produces. Considering the total-system cost (the JX-450 retails for $6995 and the JX-300 has a $4995 price tag), ScanLab is strictly for those with a serious ongoing need for top-of-the line graphics. If you can afford it, and if you can get by with the small amount of software that currently supports ScanLab's unique abilities, you will be pleased with the professional-quality output the system delivers.

Professional ScanLab
ASDG Inc.
925 Stewart St.
Madison, WI 53713
608/273-6585
$995
Two megabytes required. ►

THE COPYIST PROFESSIONAL

Someone is taking note of your notes.

By Bob Lindstrom

MANY MUSICIANS COMPOSE intuitively, working out scores on instruments rather than the printed page. Still, musical notation remains a preferred way to preserve canorous expressions, and the most efficient means of sharing those thoughts with other performers. While our system for writing out music is versatile, it is complex—and hardly efficient. No wonder modern musicians favor playing to penciling.

Dr. T's Copyist Professional—one of a series of programs that will include The Copyist Apprentice ($99) and The Copyist DTP ($399)—provides composers and performers with some of the best of both worlds. Besides being a professional-quality score editor, the program converts music files from computerized sources. By importing MIDI (Musical Instrument Digital Interface) files to your Copyist software, you can automatically notate music that you have hammered out on your synthesizer and realize true performance-to-page convenience.

PLAYING ALL THE PARTS

The Copyist Professional software consists of several programs that provide a variety of input and output options.

The first module, The Copyist, is a music entry-and-notation system that displays and edits full musical scores up to 50 pages long. The Copyist's on-screen representation of scores is the finest I have seen on the Amiga. You can view your piece in either medium or high resolution; the former is impressive, but in hi-res your score is a work of art.

With the Parts module you can extract individual voices from scores edited in The Copyist. In theory, you could compose a full score in The Copyist (or import one) and then, using this module, print out parts for each member of your ensemble.

Synth, a file-conversion program, transforms Copyist data files into standard MIDI files or into .ALL files for use with Dr. T's Keyboard Controlled Sequencer (KCS). Thus, if you feel more comfortable with paper than with MIDI, you can write out your entire score with The Copyist and use Synth to convert your music into MIDI files for performance on synthesizers.

Font Editor lets you customize up to ten musical symbols. This feature is particularly useful for realizing the esoteric notation sometimes required in avant-garde scores.

Finally, the software provides three custom-printing programs designed to optimize output quality for Epson-compatible printers, Hewlett-Packard LaserJet Plus compatibles, and your choice of any other printer supported by an Amiga driver.

The two program disks employ the same key-disk copy protection Dr. T's uses for its other products. The 155-page, ring-bound manual includes a brief, helpful tutorial section, and a bibliography offering suggestions for those

Continued on p. 66

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The "Sound" of Music

WITH THE RIGHT hardware and software, you can use your Amiga to create a wide and varied assortment of music. The Amiga's basic design includes some pretty sophisticated sound-generating circuitry that, together with its multitasking operating environment, enables you to make effective use of a slew of good music peripherals and software on the market.

Knowing how the Amiga records and plays sounds can be invaluable in taking full advantage of its music-making capabilities.

By Tim Tully

Understanding how the Amiga's sound system works and what its limitations are (the first part of this article) will make you better equipped to choose and use those support products, and thus make better, more satisfying music. In the second part we will look at how MIDI (the Musical Instrument Digital Interface) can enhance the Amiga's music-making capabilities. Also, we will examine the Amiga music market—digitizers, sample editing software, synthesizers, MIDI sequencers, patch editors, and so forth—with an eye towards showing you what they do, how they work, and which ones best suit your music's requirements.

Amiga Sound Capabilities—And Limitations

BUILT INTO THE Amiga's hardware are four sound channels: two connected to its left audio output and two to its right. If you connect these to a sound amplification system (like connecting your CD player to an amplifier or receiver), you can play stereo sounds from the computer.

The way those sounds get into the Amiga is through digital sound sampling, a process by which a computer can "listen" to any sound, and turn it into digital information—a series of bytes it can store. The computer can then feed the stored data back through a digital-to-analog converter (DAC), an amplifier, and speakers to turn it into sound again. It can also transpose the pitch of the sound, so the sound can be played like a musical instrument, and modify it in a number of other ways. This is the same technology behind compact discs and the dedicated samplers used by professional musicians. ►

ILLUSTRATED BY PAUL MOCK



To a degree, the Amiga's sampling capabilities give it the exciting potential to be a software-controlled musical instrument, capable of playing any sound that can be sampled (i.e., any sound). But, you ask, why only "to a degree?" To answer this, we need to delve a little into physical acoustic theory.

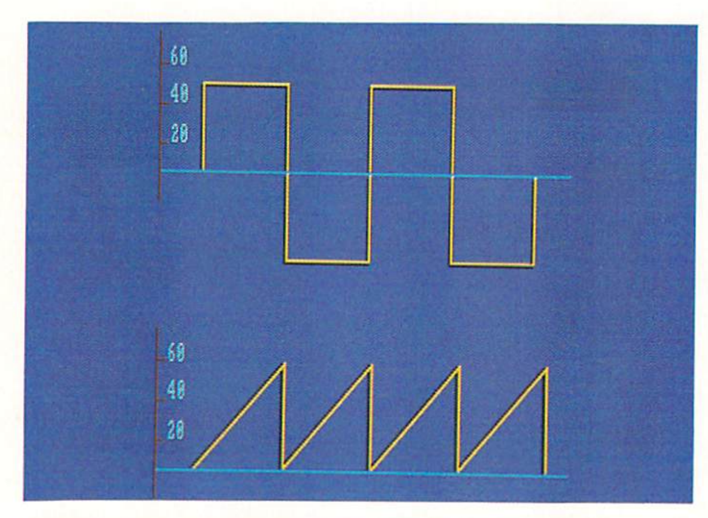
CATCHING THE WAVE

Physically, sounds are waves in a medium (usually air), generated by some vibrating object—a guitar string, a drumhead, a loudspeaker diaphragm, or whatever—that our ears interpret as sound. To understand sound waves better, imagine throwing a pebble into a pool of water. The vibration this creates results in ripples—waves—that are very similar to sound waves. These ripples may serve as a good image for explaining two important characteristics of sound waves: amplitude and frequency.

If you measure the distance, up-and-down, from the peak of one ripple in the pool to the bottom of its adjacent trough, you will find the wave's *amplitude*. Determining the amplitude of a sound wave is a measurement of the sound's loudness.

Go back to the pool and measure the time it takes for one complete cycle of the ripple wave—from the tip of one peak to the tip of the next—to move past a given point. This will give you the *frequency* of the wave. With sound waves, frequency translates into pitch: the higher the frequency of the wave, the higher the pitch of the sound you hear. A wave's frequency is usually expressed in kiloHertz (kHz). A wave vibrating at one kHz is completing one thousand complete wave cycles per second.

Shape is another important aspect of sound waves, in that the shape of a wave determines the color or timbre of a sound. Figure 1 displays two simple wave forms—a square wave and a sawtooth wave—and one complex wave. If we put these waves through an amplification system and a loudspeaker, the square wave would produce a sound similar to a clarinet, the sawtooth wave would sound brassy, and the complex waveform would sound like a note played on a piano (for the simple reason that it *is* a sampled piano note).



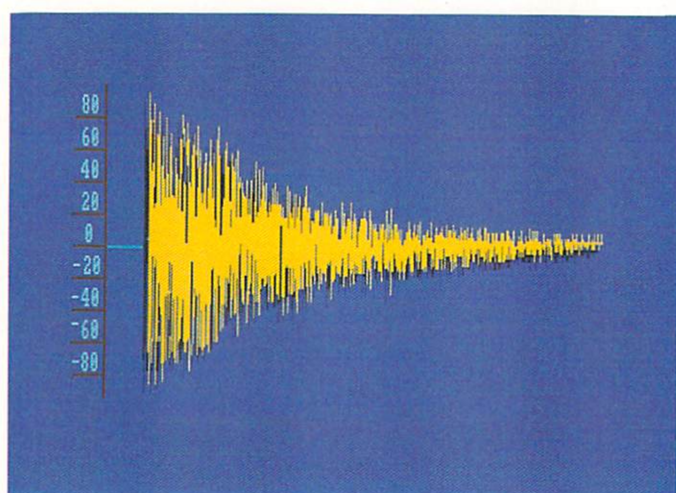


Figure 1. A square wave, a sawtooth wave, and the waveform of a sampled piano note.

All sound waves are *analog* phenomena—they occur as a continuous change. The vibrating object compresses and decompresses the air again and again to create the wave. Your Amiga, on the other hand, is a *digital* device; it only understands discrete occurrences of ones and zeros. To record a sound, the Amiga needs to see it as a digital phenomenon.

The answer to this problem is a device called an analog-to-digital converter (ADC). The ADC listens to a sound wave, records ("samples") its amplitude—thousands of times per second—and sends these measurements to the computer as individual digital numbers. These are stored and played back later to reproduce the original sound. Figure 2 shows two examples of how an ADC might sample the various points on a simple sine wave.

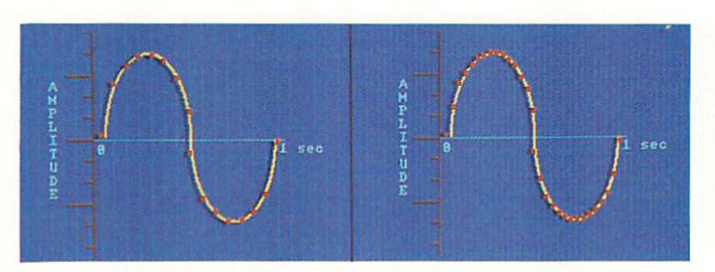


Figure 2. A simple sine wave showing the points where it was sampled at a low rate (left) and at a higher rate (right).

Once a sound is sampled, the Amiga stores the sound data in a standard file format—Form 8SVX, which is a part of the IFF (Interchange File Format). The upside of this is that third-party developers have a standard around which they can design software. The downside is that 8SVX sets rigid, and not always the most musical, limits to the ways you can arrange and "loop" samples. (We'll discuss looping in greater detail later.)

One developer, Mimetics Corp., has devised its own sample format for use with the company's Sound-

Scape series. Although it increases the range and flexibility of Amiga sampling, it has not gained acceptance as a standard among other third-party developers.

Amiga Sound Samplers

Sound samplers (digitizers) allow you to sample your own sounds into the Amiga, edit them in various ways, and play them back. They usually consist of a small box (the ADC) that plugs into the Amiga's parallel (printer) port, and some sample-editing software. Two solid performers in the field are Datel Utilities' Pro Sampler Studio and SunRize Industries' PerfectSound. Each stores its samples in the standard, IFF format. Through its left and right inputs, PerfectSound will sample stereo sounds at up to a 25 kHz sampling rate. Datel's ADC—which includes a microphone pre-amp—uses one of its three mono inputs ($\frac{1}{4}$-inch mic, line level, and 5-pin mic), leaving the stereo channelizing up to its software, and takes samples at rates up to the Amiga's maximum Direct Memory Access rate of 28,867 kHz.

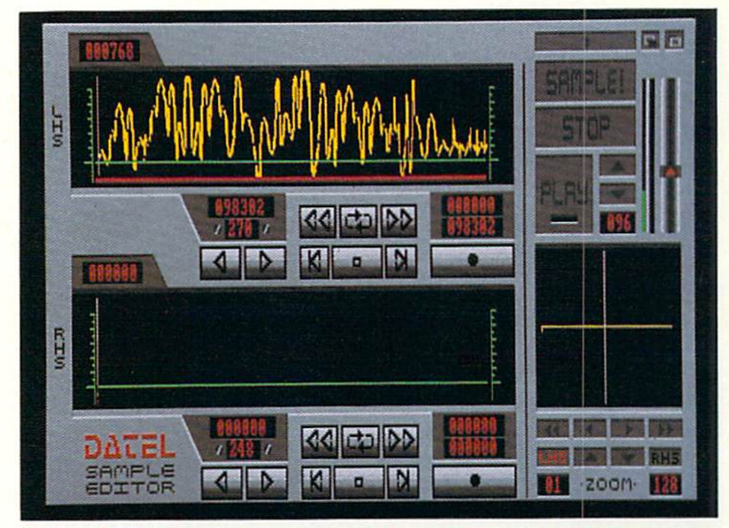
The principal strength of Datel's sample-editing software is its looping feature. (To conserve memory, the final portion of a sample is often "looped"—played over and over—to create a sustained sound. Determining the points in a sample where to begin and end a loop is an art requiring patience, skill, and good editing software.) PerfectSound, on the other hand, excels at transposing samples and arranging them across pitch ranges to create musical instruments. Both packages allow you to sample a sound, trim off any unwanted parts, and store it for later playback. Because both follow the Amiga standard IFF format, most programs using Amiga samples can access the sounds you create with either sampler.

SunRize Industries also offers a separate sample-editing program, StudioMagic ($99.95), which can be substituted for the software packaged with PerfectSound or used with other samplers. It affords more sophisticated editing features, and it allows you to play IFF samples (along with MIDI-produced sounds) from the keyboard of an optional MIDI-connected synth, splitting it into sections.

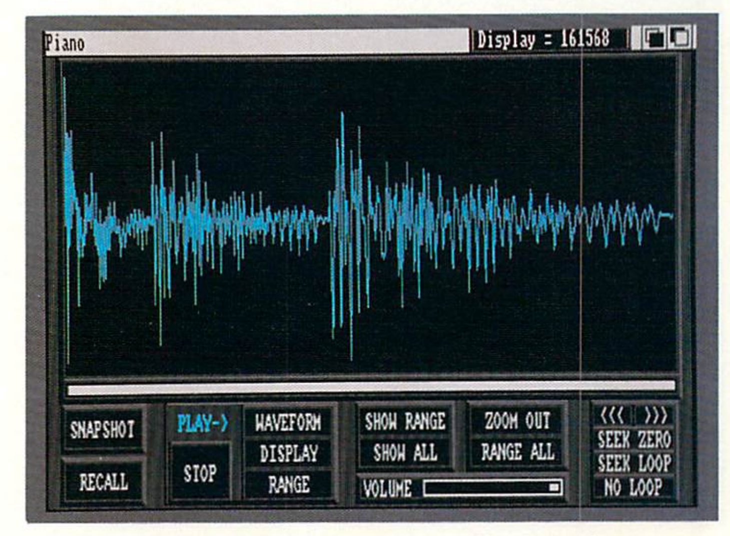
FutureSound (Applied Visions) is another sound sampler with excellent editing software that allows you to vary sampling rates, combine and swap sections of four resident samples, and graph sound waves. Two new samplers, A.M.A.S.—Advanced MIDI Amiga Sampler (Microdeal/MichTron) and ProSound Design (Precision) have recently arrived on the market. Both include sample-editing software and provide MIDI support.

A related package, Aegis' AudioMaster II, is actually only editing software—there is no ADC included—but it can be used with samplers from other manufacturers (both PerfectSound and Pro Sampler Studio work fine) or it can load already sampled files. AudioMaster II can use Amiga expansion RAM for larger samples (which allow for higher sampling rates and thus better sound quality, and for stereo sampling, which doubles the file size). It can also set sample loop points, mix samples together to get thicker, more interesting sounds, and tune your samples accurately. It allows for quite sophisticated sample editing, including copy, cut, and paste, as well as freehand drawing to reshape an existing sample. AudioMaster II's most intriguing function is its ability to "resample" an existing sample without changing its pitch—a valuable memory-saving feature. This is a powerful program that would be highly useful in an application requiring serious manipulation of Amiga samples.

In addition to sampling sounds from the outside world, the Amiga can create and store synthesized waveforms in its IFF SMUS (pronounced "ess-mus") format files. One particularly fascinating program offering exciting possibilities for creating IFF sounds is Synthia (The Other Guys). It offers features and ►



Datel's Sample Editor lets you edit a sound wave with the mouse.



AudioMaster II gives you several options for editing a waveform.

capabilities often found only in expensive, professional synthesizers; it comes very close to its stated goal of being a friendly, inexpensive, and comprehensive "real" synthesizer. It uses standard additive and subtractive methods of synthesis as well as a few other, more arcane methods to create a wide range of complex, good-sounding timbres and sophisticated effects (flanging, filtering, delay, and others). Learning to use Synthia is like taking a good survey course in synthesis, signal processing, acoustics, audio, and the Amiga's role in all of these areas. More practically important, however, is that once you have mastered the program, you will be able to create and modify an impressive array of IFF-format instruments that you can use in any number of other Amiga music programs.

Not Quite Grammy Material

While the Amiga's sampling abilities are prodigious compared with other personal computers, they are nonetheless limited. Although many music programs use Amiga samples both as simple musical instruments and for speech and sound effects, serious musical applications are limited by hardware factors.

First, consider the size of the bit path used to sample the sound. Each sample taken and stored in RAM is a measure of the sound wave's momentary amplitude.

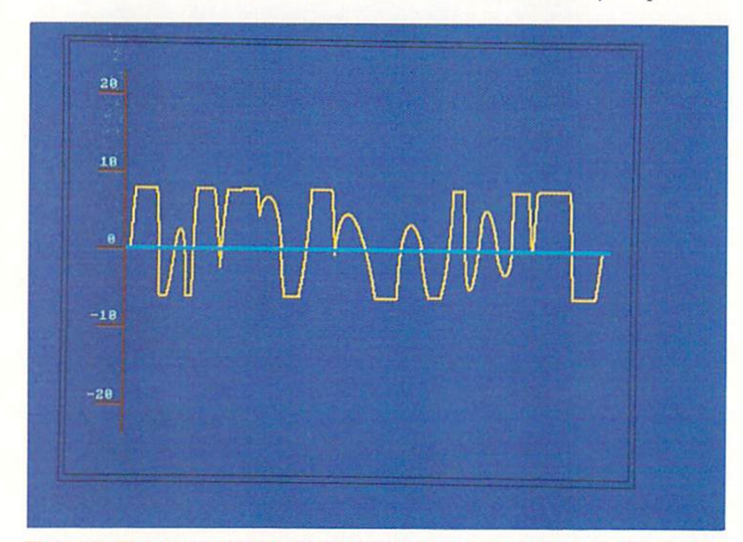


Figure 3. The dynamic range of this waveform exceeded that of the 8-bit sampler that took it. Notice how the peaks and valleys are cut off flat, causing distortion in playback.

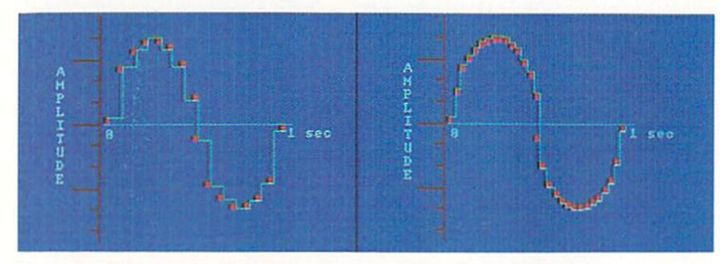


Figure 4. The results of a low sampling rate (left) and a higher one (right). The higher rate yields a smoother sample.

If there are not enough bits in an individual sample to record the larger numbers (higher amplitudes), the "dynamic range" of the sampled sound—the distance between the highest and lowest playable amplitude—will be limited, causing distortion in playback. The Amiga uses an 8-bit format that, compared to the 12- and 16-bit schema of dedicated samplers, produces "scrunched" sounds with a relatively small dynamic range. Figure 3 demonstrates this phenomenon.

The sampling rate is another factor that must be taken into account. The more samples an ADC takes per second, the more accurately it will record the sound. Earlier, in Figure 2, we noted the difference between a sound wave sampled at a low sampling rate and one sampled at a high rate. Here, Figure 4 displays the waves produced when the samples from Figure 3 are played back. You can see that at the higher sampling rate (the more samples taken per second), the recorded sound wave has a higher resolution and is more accurately reproduced.

Even a sound with a specific frequency, such as a note from a musical instrument, contains a number of frequencies above the one we perceive as its main pitch. Acoustic physics tells us that when a sound is sampled, any of these frequencies higher than half the sampling rate will produce ugly sounds in the sample—a phenomenon called "aliasing" (more on aliasing below).

The Amiga can sample at a maximum rate of only 28,867 kHz, limiting the highest audio frequency it can sample to about 14 kHz. That's not bad, but it does not begin to approach the 44.1 kHz rates of dedicated samplers in the compact disc field. Also, to mitigate the effects of its low sampling rate, the Amiga has a low-pass audio filter that limits the full-volume output to frequencies less than about 4,500 hertz. This is just about the note "A-above-middle-A." The effect of the output filter, however, is that when you go above this region, the output starts to decrease until frequencies above 7 kHz are cut out entirely. (Most adults can hear up to about 15 kHz; children often up to 20 kHz.)

The filter was installed to reduce aliasing distortion, which occurs when the discrete sampling frequency mixes in with the highest frequency that you expect to reproduce—producing a "beat" frequency you can hear. The combination of the sampling frequency and the highest frequency sampled produces both a sum of frequencies and a difference of frequencies. With the filter in place, if the sampling frequency is at least 7 kHz higher than the highest frequency to be produced, none of the beat frequencies can pass through the filter and distortion is minimized.

You can disable the audio filter in the Amiga 500 and A2000, thus increasing the high frequency response of the system to nearly its maximum theoretical response of about 14,450 Hz. This, however, also allows aliasing distortion to pass through to the output. Therefore, if you hear tones or noise in the ►

output that you did not hear with the filter on, it is probably aliasing distortion. You can see why the filter issue is a real dilemma—damned if you do, damned if you don't. At best, if the initial sampling has not created aliasing, playing an A500 or A2000 without the filter can produce fuller, brighter sounds—although this by no means solves the basic hardware problem.

Finally, the most nagging of its musical limitations may be that the Amiga can play only four notes at once. By contrast, even the least expensive synthesizer will play eight. All cyber-techno quibbles and acoustics aside, four voices just do not a satisfying musical instrument make.

What all this adds up to is that the Amiga is highly functional for reproducing sound effects, speech, or the sound requirements of arcade games. With no help from anything but its own built-in circuitry, however, it cannot go much beyond making enjoyable but simple music.

MIDI to the Rescue

AS AMIGA MUSICIANS know, however, the Amiga is certainly capable of performing beyond the realm of casual musical entertainment. The reason is MIDI: the Musical Instrument Digital Interface. Developed in late 1983, MIDI is a serial interface that uses five-pin black-and-silver cables to carry information at 31.25 Kilobaud. Simply explained, it allows one microprocesor-based synthesizer to control another. Thus you can play one keyboard while another keyboard hooked up via a MIDI cable plays exactly the same notes over a ten-octave range. In addition, MIDI not only communicates *which* notes to play, but also *how* to play them—through a variety of control features, including Note Velocity, Pitch Wheel, Aftertouch, Polyphonic Key Pressure, Program Change, Control Change, and so forth. There are 16 channels in MIDI, each of which can send a separate set of information to its own syhthesizers and samplers—in effect allowing 16 discrete performances to occur at one time.

MIDI offers an impressive number of functions that have enabled computers such as the Amiga to become the control center of home recording studios that at their best can produce sophisticated record-quality music.



Let's Hear it from the Sequencer Section

Undoubtedly, the sequencer is the most familiar genre of MIDI software. Sequencers allow a musician to play one or more MIDI instruments—synthesizers, samplers, drum machines, and so forth—and have the computer record this performance and play it back on the same MIDI instruments, like a computer-driven player piano. The most powerful and dependable of MIDI sequencers for the Amiga is KCS, the Keyboard Controlled Sequencer, from Dr. T's Music Software. (The company also makes a more inexpensive, less fully functioned little brother, MRS, the MIDI Recording Studio.) Long a popular item for the C-64 and Atari ST, the newer Amiga version of KCS is a highly sophisticated musical composition tool.

If you connect one or more synthesizers or other MIDI instruments to an Amiga loaded with the KCS, it will record your performances on those instruments, then play them back on request. You can assign recorded performances to any of the different intruments—each set to play a different sound—to build up an entire composition including percussion, bass, piano, strings, and so on. In the process, the sequencer will display the notes you have played, allowing you to edit them to make them more in time, correct pitch errors, add nuances, and much more.

KCS is unique in many ways. For instance, you can record a track, let it play repeatedly, and then play over it, while the KCS records you in a new track for each iteration of the loop. This lets you listen to what you have done, integrate the parts you like into your composition, and discard the rest. In addition, you can have a KCS sequence "call" other sequences to create a complex interaction of parts.

KCS' Programming Variations Generator will copy a sequence you have laid in, but then change it—in varying degree and frequency, according to a wide range of parameters you select—in timing, note volume, note duration, and so forth. By repeating this process a number of times, you can create a series of "evolving" sequences that can help you tremendously in building up the structure of a piece.

Another sequencer, Mimetics' SoundScape Pro MIDI Studio, was introduced as a "music environment" intended to take advantage of the Amiga's multitasking. It is based on a number of independent modules performing different functions, linked together by a "patch panel." A "player piano" displays notes as they play; a sequencer (called the "tape deck") will record and play MIDI data to sequence external MIDI instruments; a sampler will record samples in the Amiga's memory; and so on. SoundScape can send and receive files from a number of other programs, including Intelligent Music's M and Electronic Arts' Deluxe Music Construction Set.

Although an exciting concept, SoundScape's editing capabilities have been overshadowed by later sequencers. The program's modular approach has given it the potential to be a serious audio-for-video-production program, and with improved documentation and the right development, this may be its future.

Ported to the Amiga from the IBM, the Quest Sequencer: Texture (Sound Quest) is more simply structured than KCS, but powerful nonetheless. With Quest, you record "patterns"—short sections of a piece—one at a time, then string them together to form the whole fabric. Each pattern has a number of separate "tracks," each capable of playing a different instrument simultaneously, much like a multitrack tape recorder. The current version of this sequencer ►



(Stage 1) is not entirely full-featured, but the manufacturers are working on a pro version with all the capabilities of the latest IBM offering.

Although not actually a sequencer, Aegis' Sonix is a jack of all trades combining the functions of a sequencer, sampler and on-board synthesizer. You can create and edit some of the basic, single-cycle waveforms that synthesizers use to make sounds, store them in the Amiga's SMUS file format, and then load them to act as "instruments." You can load IFF-sampled sounds and sequence both samples and SMUS instruments into a composition. If the Amiga sounds aren't sufficient, Sonix can also record and play eight tracks of MIDI instruments and perform other basic operations, such as selecting up to 32 of a synth's patches (most full-featured synths hold 64 or more) and MIDI channels. The Sonix manual covers the basics of music, synthesis, and sampling; the program is an interesting, hobbyist-level package.

Some new MIDI sequencers worthy of note have recently arrived on the market. An updated version of Dynamic Studio (New Wave Software) builds on the original's already interesting approach of combining a sequencer with a digital drum machine. MIDI Magic's (Circum Design/Brown-Wagh) Intuition-style design and logically consistent functions make it easy to use. Although it does not offer the speed and efficiency professional MIDI musicians might require, a handful of unique features, a reliable design, and a fairly inexpensive price tag may make it an attractive choice for beginners or even serious amateurs. Music-X, a somewhat more expensive offering from MicroIllusions, is a more full-featured sequencer providing good editing features and a fully configurable librarian.

Patchwork Composition

Keep in mind, however, that before you even begin to record your sequence, you have to develop the sounds you want in your synthesizers. Because most synths today have only a small LCD or LED screen to communicate their many functions, a raft of synthesizer patch editor/librarians has emerged. These programs use the Amiga to edit the sounds (also called "patches," from the days when you changed a synthesizer's sound by connecting patch cords to the synth) in the synths and store them on disk, allowing you easy visual editing and the ability to develop libraries of sounds for all your MIDI instruments.

While most of the popular computers have their share of patch editors, the multitasking Amiga takes the concept further. Typically, the process is to tweak a patch, play a few notes, tweak, play, tweak, close the editor, boot the sequencer, listen to the patch in the context of your composition, and then probably go through the routine again...and again. An altogether different procedure is to boot both programs and, while the sequencer is running and your music is playing, pop up the editor screen to work on your sounds—in context. Although the Amiga's internal ►

Product Information

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Kawai K-5 series: $175
Lexicon PCM-70 series: $149
Oberheim Matrix 6/1000: $149
Roland D-50: $149
Roland MT-32: $149
512K and MIDI interface required.

Dynamic Studio
New Wave Software
PO Box 438
St. Clair Shore, MI 48080
313/771-4465
$199.95
One megabyte, MIDI keyboard, MIDI interface required.

FutureSound
Applied Visions
Suite 2200
1 Kendall Square
Cambridge, MA 02139
617/494-5417
A/1000: $179
A500, A2000: $119.95

KCS
Dr. T's Music Software
see address at "Copyist"
KCS 1.6A: $249
512K and MIDI interface required.
KCS Level II: $349
One megabyte and MIDI interface required.

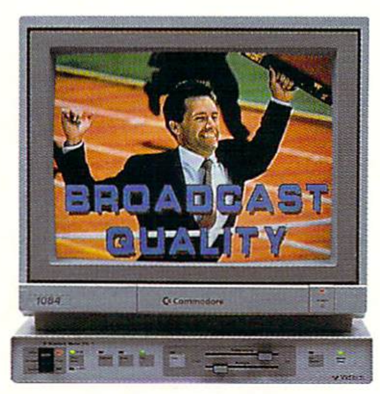
M for the Amiga
Intelligent Music
116 N. Lake Ave.
Albany, NY 12206
518/434-4110
$200
One megabyte recommended.

MIDI Magic
Brown-Wagh Publishing
16795 Lark Ave.
Suite 210
Los Gatos, CA 95030
408/395-3838
$149.95
MIDI synthesizer, MIDI interface and two MIDI cables required.

MRS
Dr. T's Music Software
see address at "Copyist"
$69
512K required.















Coming To A Screen Near You.

If you're ready to become your own studio producer, there's only one desktop video system that will bring NTSC and S-VHS to your Amiga's screen. The Scanlock system by VidTech. Other systems give you a genlock that's "either-or." They either support NTSC or S-VHS. But not both.

Two For One

With Scanlock, you get two genlocks for the price of one. So you can migrate from NTSC to the newer S-VHS format without investing in another system. We also offer a Scanlock model that is compatible with the International PAL TV format, including its new S-VHS version.

Scanlock's dual-genlock system gives you broadcast-quality video at consumer prices. And our system offers all the bells and whistles, including front-panel fingertip controls, multiple monitor connections for viewing and editing, and independent fade controls for both reference and Amiga videos. If your Amiga is supporting a load of peripherals, we provide a connection that lets you use an optional external power supply.

Scanlock is a breeze to use. A "glitch-free" vertical interval switch lets you insert, reverse and remove reference video and Amiga graphics at the touch of a finger. And you can switch between NTSC, S-VHS and analog RGB formats without moving cable connectors. When you're done editing, you can resume normal Amiga operation with the flip of a switch.

Don't Get Locked Out

So if you're ready to become your own producer, choose the desktop video system that doesn't lock you into one genlock — the Scanlock system by VidTech. Coming to a screen near you.

Call or write us today: VidTech International, Inc., 2822 NW 79th Ave., Miami, Florida 33122. Telephone 800-727-2261 or 305-477-2228. Fax 305-591-1651. Prices:NTSC-$995, PAL-$1,095. Distributed by Southern Technologies, Dallas, Texas.



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Product Information continued

Music-X
MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
818/360-3715
800/522-2041
$299.95
512K required.

PerfectSound
SunRize Industries
3801 Old College Rd.
Bryan, TX 77801
409/846-1311
$89.95

Pro Sampler Studio
Datel Computers
3430 E. Tropicana Ave.
Unit 67
Las Vegas, NV 89121
702/454-7700
$119.99

ProSound Designer
Precision Inc.
8404 Sterling St.
Suite A
Irving, TX 75063
214/929-4888
$159.95

Quest Sequencer Stage 1: Texture
Sound Quest Inc.
5 Glenaden Ave. East
Toronto, Ontario
Canada M8Y 2L2
416/234-0347
800/387-8720 (inquiries, US only)
$165
512K and MIDI interface required.

Sonix
Aegis Development
see address at "AudioMaster II"
$79.95
512K required.

Sound Quest: Master Editor Librarians
Sound Quest Inc.
see address at "Quest"
CZ Master: $150
D10/110 Master: $165
D50 Master Editor/Librarian: $165
DXII/TX802 Master: $190
DXII/TX812 Master: $165
DX Master Editor: $165
FB-01 Master: $150
K-1 Master: $165
M1 Master: $165
Matrix 6/1000 Master: $165
MT-32 Master: $165
SQ-80/ESQ Master: $165

Sound Sampler
Mimetics Corp.
PO Box 1560
Cupertino, CA 95015
408/741-0117
$99.95

SoundScape Pro MIDI Studio 1.4
Mimetics Corp.
see address at "Sound Sampler"
$179.95
One megabyte, two disk drives recommended.

StudioMagic
SunRize Industries
see address at "Perfect Sound"
$99.95

Synthia
The Other Guys
PO Box H
Logan, UT 84321
800/942-9402
$99
Synthia Professional: Release 4/89 ($TBA)
512K required.



sounds may have limitations, its multitasking is a godsend in this situation.

The most prolific of the patch-editor makers are doubtless Dr. T's and Sound Quest. Dr. T's Caged Artist Editor/Librarian series includes programs for Yamaha 4- and 6-operator synthesizers, the Casio CZ line, Roland's D-50 and other L/A instruments, Oberheim, Kawai, and Ensoniq machines, as well as for signal-processing effects modules from ART and Lexicon. Sound Quest's Master Editor/Librarian series offers a similar list and also includes a program for the popular Korg M-1.

Both companies make programs that present clear, visual depictions of the often complex relationships among the parameters of a synthesizer sound. Click and drag techniques ease your editing of envelopes, filter cutoff points, and other graphically representable functions. The ability to transfer single sounds or entire banks of sounds rapidly from synth to Amiga and back is invaluable.

Perhaps less well know, but one of the most fun to use of all the patch editors, Diemer Development's C-Zar for the Casio CZ-101/1000 has a quintessentially Amiga-like look and feel. In contrast to the businesslike screens of Sound Quest's and Dr. T's editors, C-Zar's screen looks like a jet fighter cockpit. Functionally, it works easily and well and takes excellent advantage of the Amiga's graphics—displaying, for example, the envelopes of all four of the CZ's oscillators at once in different colors. This is a great help in conceptualizing the sound you are trying to get.

Some Final Notes

Brief mention of a few additional programs outside the main categories of our survey is in order. Billed as an "algorithmic composition tool," Intelligent Music's M is a clever composer's helper that can get budding musicians out of some jams and save lots of time and effort in the bargain. Like the Programmable Variations Generator module of Dr. T's KCS, it uses the Amiga's random-number generating chops to modify the music you give it in an almost infinite number of ways. With tools like these you can have the Amiga crank out unending variations of the melody you played in—all modified according to constraints you specify and in dimensions you select—until you hear something that speaks to you. You can transfer this to the sequencer, edit it if necessary until it fits exactly, and get your muse back on the job.

Also, once your music is finished, you'll naturally want to have a printed score. (How else will the orchestra be able to play it?) Deluxe Music Construction Set (Electronic Arts) and The Copyist Professional (Dr. T's Music Software) are the two most prominent scoring programs on the market. Both will generate notes, staves, articulation marks, and lyrics, and produce good-looking scores.

With a basic understanding of Amiga sound capabilities—and the ways in which MIDI can enhance them—plus a familiarity with the Amiga music products on the market, you're now ready to get out there and make some very fine music on your Amiga. ■

Tim Tully is an editor at Electronic Musician. *He writes frequently about musical applications for computers and has reviewed many Amiga MIDI products. Write to him c/o Editorial Dept.,* AmigaWorld, *80 Elm St., Peterborough, NH 03458.*

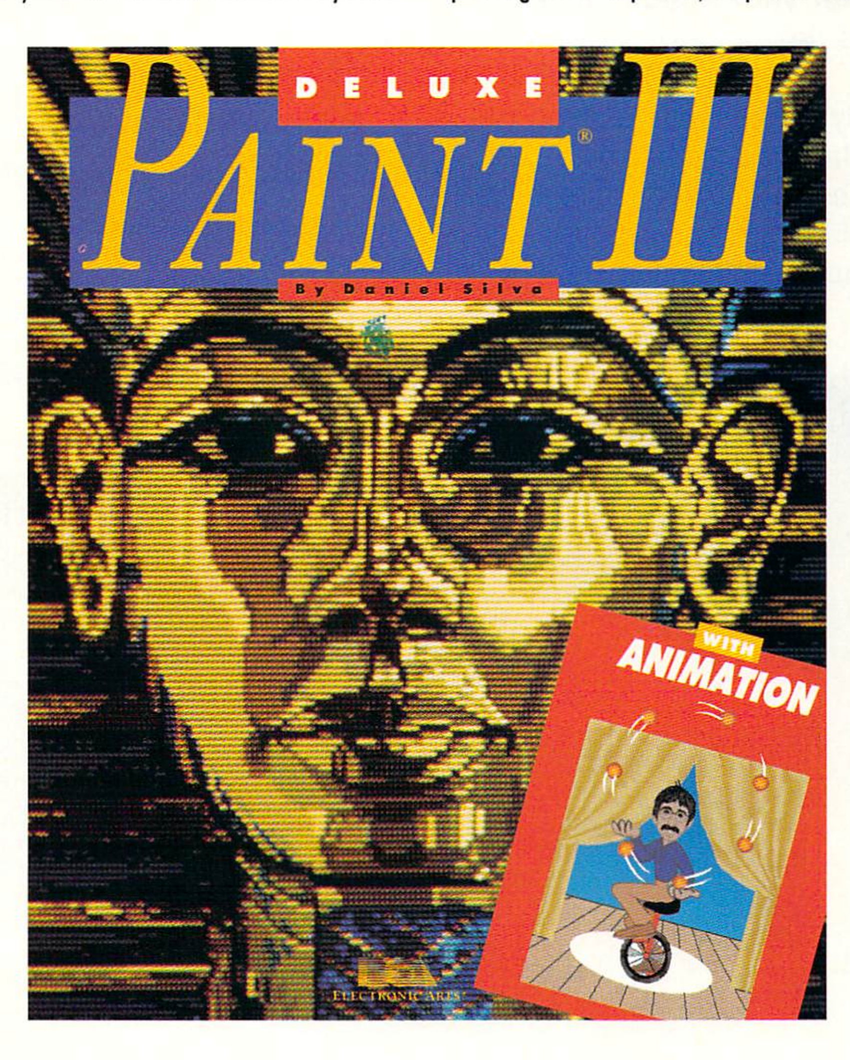
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DeluxePaint III makes animation easy. With the AnimPaint feature, you can create animation just by pressing one key to record your paint strokes, and another key to play them back. You can also use any multi-cel animation as a brush and paint with it, even in full 3-D.

8 New Paint Features

DeluxePaint III also adds sophisticated features to the number one Amiga paint software: Extra-halfbrite support for 64 colors; direct overscan painting for desktop video; wrap and tint brush modes for special effects; better font support; improved compression; and many performance enhancements, including faster perspective. Product requires 1MB of RAM.



SPECIAL UPGRADE OFFER:

Upgrade Now and Save $92.95. (Suggested Retail Price $149.95)
Send DeluxePaint I or II manual cover and $57.00 to
Electronic Arts, P.O. Box 7530, San Mateo, CA 94403.
If you bought DeluxePaint between 12/1/88 and 3/31/89 call 800-245-4525.
Allow 2-4 weeks. CA orders add $3.50 sales tax.

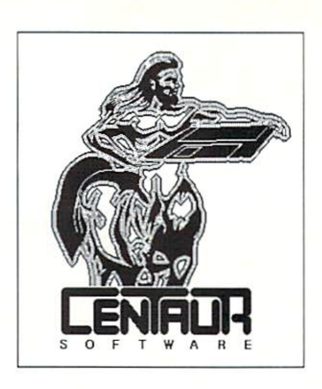


ELECTRONIC ARTS®

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Forms In Flight II

3D GRAPHICS AND ANIMATION SOFTWARE

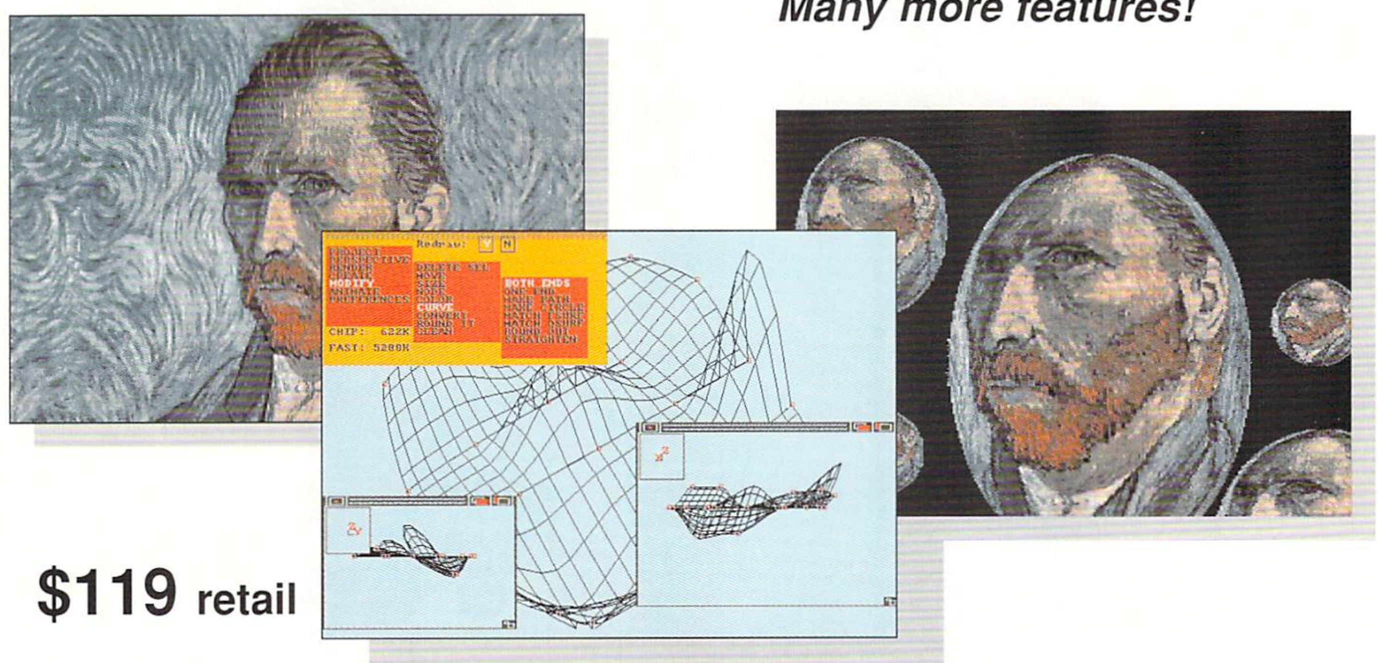


Win Amiga 2500 Power! (details below)

The new Forms In Flight II is the missing link for your Amiga three dimensional graphics design and animation.
Create fast, high quality images with fancy curves and curved surfaces. Then use the complex objects you design to create smooth animations. You can also import objects from other animation programs using Interchange by Syndesis.

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- **P** hong (Smooth) Shading
- **T** exture Mapping
- **E** xtrusions along curved paths
- **H** ierarchical animations using paths
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Dealers Circle 239 on Reader Service card.



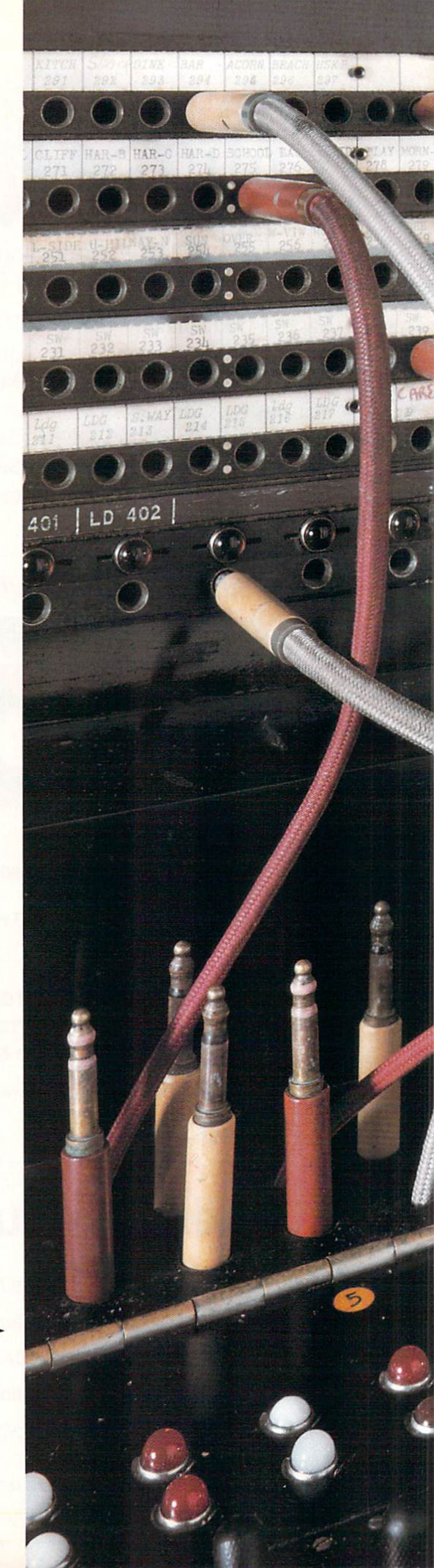
NET RESULTS

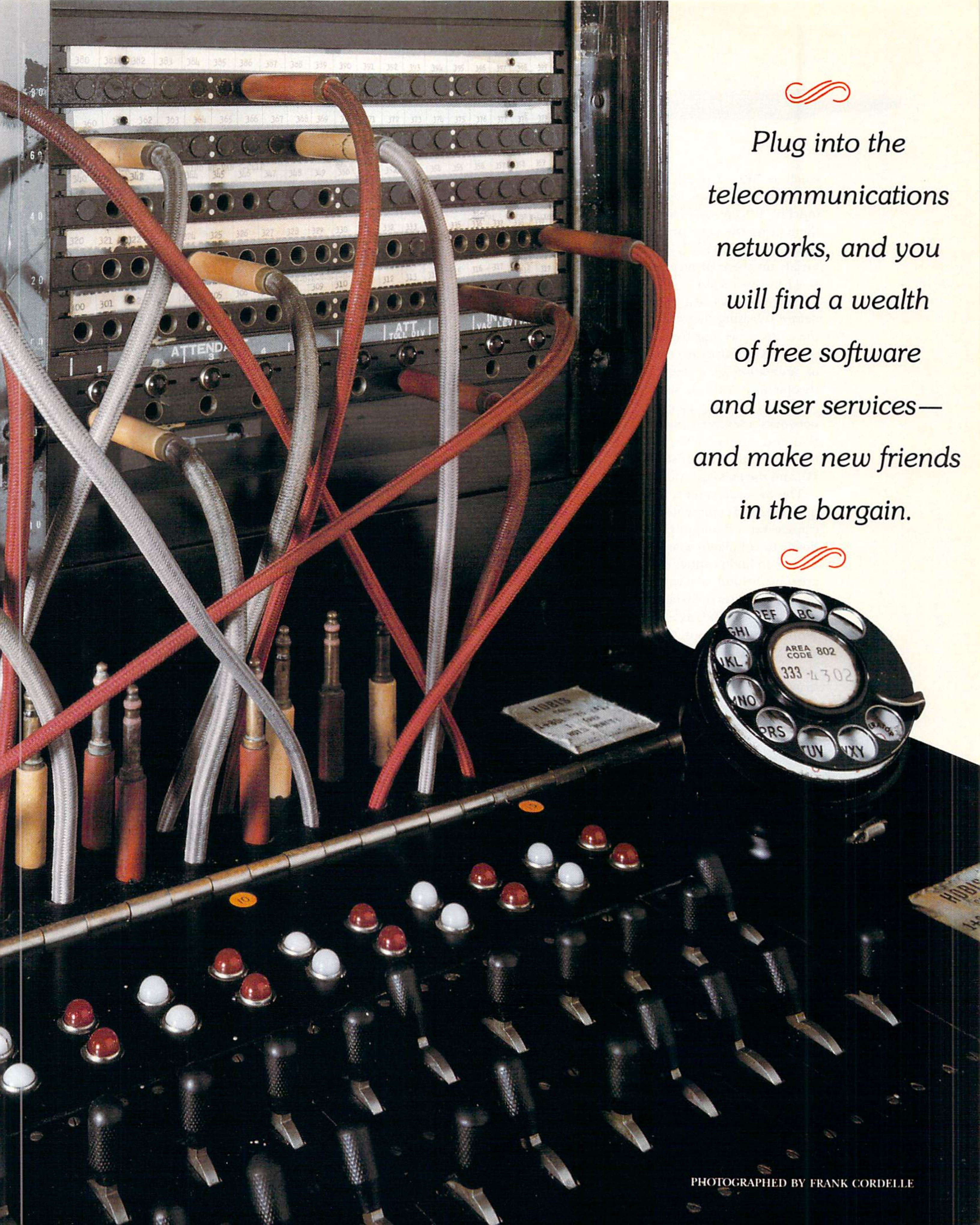


THE MAJOR TELECOMMUNICATIONS networks that serve the Amiga—American PeopleLink (PLink), CompuServe, GEnie, and BIX—are like large electronic clubs. Your dues are in the form of hourly rates. When you join a network, as with all exclusive clubs, you receive a user ID and secret password. A modem (MOdulator/DEModulator) and telecommunications software coupled with your Amiga opens the club doors, or in this case, phone lines. Type your user ID and password, and you are inside to browse in the libraries of public-domain, freely distributable software, exchange messages with other members, and attend conferences. (See "The Great Software Buyer's Guide," *AmigaWorld*, December '88, p. 52, for a list of telecommunications programs.)

Huge libraries of public-domain software are the networks' main drawing point. In them, you can find programs on a multitude of subjects—business, educational, games, graphics, music, programming examples and source code, video, word processing, as well as the off-beat and unusual. If you have applications programs but need parts and tools, the libraries also stock animations, background scenery, clip art, fonts, pictures, sound effects, and other useful snips of information. Because public-domain software is non-copyrighted and freely distributable, you can download anything that looks interesting. If you would like to contribute a creation of your own to the public domain, the networks encourage uploading. PeopleLink, GEnie, and BIX suspend on-line charges while you upload. Because uploading is often time consuming and, if you are calling long distance, expensive, many people use an archiving program ►

By Louis R. Wallace





Plug into the telecommunications networks, and you will find a wealth of free software and user services—and make new friends in the bargain.

PHOTOGRAPHED BY FRANK CORDELLE

(such as ARC, PAK, ZOO, and WARP) to compress their files to consume less memory and transmit more quickly. To run such files, you must first decompress them using the same program; all are available in the public domain. (For a comparision of and short tutorials on these programs, see "The Squeeze Play," p. 41 in this issue.)

The networks test the hundreds of submissions before releasing them to the libraries to be sure that the software is bug free. You will find that the four networks' libraries are very similar. While a program or animation may debut on one network, philanthropic users quickly spread it to the other three.

A good place to meet your fellow users is in the networks' message centers. For private communication, you can send letters, programs, or data through the electronic mail. Just indicate the recipient's user ID, and the message will be sent to his or her account.

The message centers' bulletin boards let you post questions and comments for anyone to reply to, or you can answer a question yourself. All the networks subdivide their bulletin boards by subject, making it easier for you to find postings of interest. Network members are quite helpful, so if you leave a question, someone is bound to answer it. To help you sift out items of interest from the thousands available, the networks let you selectively display postings. You can request to see everything posted on or after a specific date, since you were last on the system, or by a specific person. You can also display items by title and category.

For a faster paced exchange of ideas, the networks each offer weekly on-line conferences, the computer version of the New England town meetings. Participants are all on line simultaneously, typing their comments back and forth. When you join in, you can ask questions of the moderator, special guests (such as industry experts), and other attendees. Conferences can be arranged around a theme, such as graphics, programming, or games, or address more general concerns. As with the old town meetings, the conferences may begin with the best intentions of organization and civility, only to end in spirited "shouting" matches when opinions clash and emotions flare. They are rarely dull.

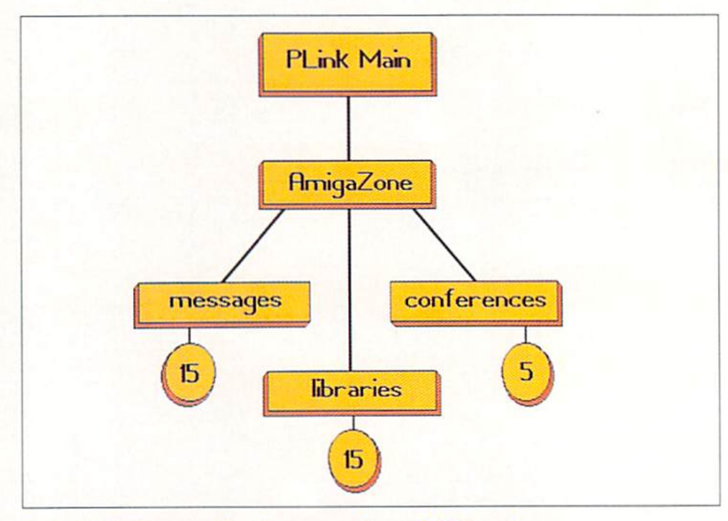
Sign Me Up

Joining a network is as simple as calling its office and reading your credit card number. (See the sidebar "The Cost of Connections" for a schedule of rates.) BIX and GEnie will activate your account immediately if you pay by credit card, while CompuServe and PLink require a week to process the information. Paying by check increases the wait to 10 days for PLink, CompuServe, and GEnie, and to two to four weeks for BIX. All four provide starter kits of instructions and on-line help to guide you through your first expeditions. To keep you abreast of the on-line news, CompuServe and GEnie send monthly magazines (*On-Line Today* and *Live Wire*, respectively) to members, while PLink and BIX publish newsletters. PLink's appears quarterly; BIX's ranges from two to five times a year.

After you log on by typing your user ID and password, each network lets you choose your mode of operations: menus or typed commands. When you are first finding your way around a network, following the menus is easier, but in the long run slower. Try to learn the shorthand-style codes as soon as possible. Using the keyboard commands will save you time, an expensive commodity when you are on line. Let's take a closer look at the four major commercial telecommunication networks open to Amiga users. Each has a different emphasis.

King of the Hill: American PeopleLink

For the Amiga, PeopleLink (PLink) is by far the largest and most active network. When you sign on, you can jump directly to the main menu of the Amiga section, the AmigaZone, by typing /GO AMIGA. The AmigaZone consists of a collection of 15 special-interest message sections, offering something for everyone.



Each AmigaZone section has several special-interest areas.

You will find information on rumors, utilities, hardware, animations, Workbench, programming in several languages, music, telecommunications, user groups, graphics, desktop publishing, and games.

Each week, PLink hosts five major conferences. General AmigaMania discussions are on Sundays at 9PM Eastern Standard Time (EST). MIDI and music (Mondays), developers (Tuesdays), graphics, video, ►

THE PRODUCTIVE AMIGA

Real-world software solutions from Brown-Wagh Publishing...and Amiga

EXPRESS PAINT 3 - Feature-rich graphics, B/W & Color PostScript, 24-pin dot matrix, Virtual Memory, text importing, 3-D perspective, unlimited Undos & Redos, 64 color Extra Half Brite, dbl-arc curves, 6-range color cycling, large canvas. "Best of 1988" - *Commodore Magazine.*

PAR REAL I - Professional real estate analysis for realtors or investors. Amortization tables, balloon and variable payments, depreciation, financial statements, loan evaluations, lease vs. buy, cash flow forecasts, ratios, tax benefits, rate of return, 3-D barcharts, forms, agreements.

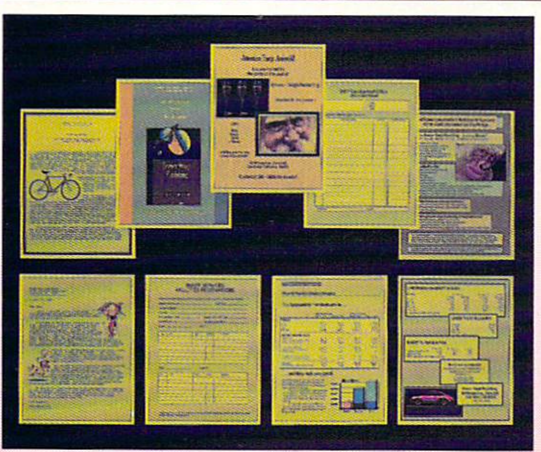
EASY LOANS - Amortization tables, tracks interest, principal and time payments. Speech output. Find incorrect charges.

OUTLINE - Organize lists for reports, meetings, appointments, recipes, etc. Cut/copy/paste. Import into WP. "Best of 1988" - *Commodore Magazine.*

PROJECT MASTER - Professional project management. Helps you manage projects instead of being managed by them. Graphic flow of activities. Best and worst case schedules. "What if" scenarios for deadlines, resources and budgets. Critical paths. Actual vs. planned. Expense graphs, Gantt and PERT charts, resource loads.



PEN PAL - Your writing Partner



UNEQUALED PRINT QUALITY & SPEED

◀ Print true printer fonts (NLQ) and graphic images on same page in same pass!

◀ Print multiple graphics on same page; each with its original colors and resolution!

UNPRECEDENTED PRODUCTIVITY FEATURES

- Automatically flow text around graphics; box & contoured boundaries; even while typing.
- Colored boxes, borders, shadows, lines & backgrounds.
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- Spellcheck; 100K words; unlimited user dictionaries.
- Analyze writing style; statistics & reading grade-levels.
- Open 4 documents; search/replace; undo/redo.
- Access 200 B/W or color fonts; sorted by name and size.
- Mailmerge & copy from built-in database. Report templates.
- Open 4 databases; 9 data types including calculations; 32 fields per record; 32k rec. max.
- Print mail labels & reports; titles, sort breaks, sub-totals.
- Sort by multiple fields; search by logical criteria; screen totals.
- Locate duplicates; delete multiple records; merge

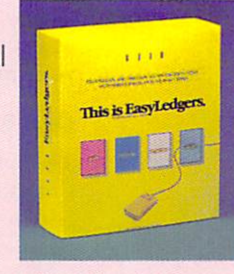
TV*TEXT - Best selling video titling software. Fonts, colors, shadows, strobes, sizing, grids, backgrounds, special effects.

TV*SHOW - Create super slide show presentations. 50 transitions. Any IFF pictures. Voice; Loops. Just point & click.

ZUMA FONTS #1-4 - Professional fonts for video & graphics. Each volume contains 3 styles in 6 sizes at 2 resolutions.

MIDI MAGIC - Easiest Midi sequencer! Fabulous interface. Help text. Multitasking, 16 tracks, 26 sequences. Quantizing. Multi channel recording. "Beginning and serious amateurs will love MIDI MAGIC for its power" - *Amiga World*

EASY LEDGERS - Fully integrated accounting system. Sales, purchases, inventory and general ledger. Extremely easy; uses familiar bookkeeping interface. No complicated codes to learn, no account numbers to remember. Just point and click.



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16795 Lark Ave. #210, Los Gatos, CA 95030

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and animation (Wednesdays), and games (Fridays) topics are discussed at 10PM EST.

If you are more contemplative than gregarious, you will appreciate PLink's public-domain library, one of the best around with thousands of files ready for downloading. The library is divided into the same 15 categories as the message center. You can quickly scan the titles of all the available files or browse through their descriptions before deciding what to download. If you know the type of program you want, you can skip to the appropriate special-interest section and view only its files.

Of the four networks discussed here, PeopleLink has the lowest sign-up fee and some of the lowest hourly rates. Considering its high degree of user activity and low price, the network offers a lot for your money.

OLD FAITHFUL: COMPUSERVE

The oldest of the national computer services, CompuServe offers the most extensive services. In addition to computer-related discussions and libraries, the network offers airline reservation services, on-line shopping, financial investment information, news, weather, and sports, among other things. Don't worry, the Amiga section is large, active, and easy to access. Typing GO AMIGA from the main CompuServe menu (or from just about anywhere else) will take you to the main menu of the Amiga area.

The menu offers three major divisions, or forums—Arts, Tech, and Vendor. Type GO AMIGAARTS, GO AMIGATECH, or GO AMIGAVENDOR to access the area you are interested in. You can bypass the main Amiga menu by typing the commands from CompuServe's main menu.

The Arts Forum offers 15 message areas and 15 libraries covering the artistic (graphics, animations, desktop publishing, music, video) and entertainment aspects of the Amiga. As with the other two forums, the Arts Forum's messages menu lists the number of subjects discussed and the number of messages in each category.

Conferences are held weekly at 10PM EST. The current schedule offers software development discussions on Saturdays, open discussions on Sundays, and beginners' conferences on Tuesdays and Thurs- ►

The Cost of Connections

ALL THIS ON-LINE activity may sound like fun, but enjoying yourself has a price. If you live in a metropolitan area, you can reach out and touch the commercial networks without paying long-distance rates. Rural residents, however, will have to pay to call to the nearest city with CompuServe or GEnie lines, Telenet or Tymnet access. To help curb the costs for heavy telecommunicators, Telenet provides PC Pursuit, an alternate phone service for computers. For $30 per month (and a one-time fee of $30), PC Pursuit lets you connect with computers in 34 metropolitan areas without incurring long-distance charges during non-prime time (6PM to 7AM weekdays, 24 hours weekends and holidays). The prime-time rate is $10.50 per hour. For more information, call 800/TELENET (voice).

While the chart below lists network connect fees by the hour, on line the fees are prorated to the minute. Rates are higher for weekday business-time access (prime time, PT), 7AM to 6PM local time, except through Tymnet where prime time is 7AM to 7PM. Non-prime time (NPT) consists of non-business hours on weekdays and all hours on weekends and designated holidays.

American PeopleLink

800/524-0100 voice
MEMBERSHIP FEE: $15 (one time)
AVAILABLE VIA: Telenet, PC Pursuit
BAUD RATES (hourly, continental US only)
NPT: $4.95 (300/1200), $11.95 (2400)
PT: $11.95 (300), $12.95 (1200), $14.95 (2400)
With PC Pursuit (Fee: $25/mo.)
NPT Only: $3 (to 2400)
With Frequent Plinkers (Fee: $10/mo.)
24 Hours: 25% discount (to 2400)
With Both Services (Fee: $35/mo.)
24 Hours: $2.25 (to 2400)

BIX

Byte Information Exchange
800/227-2983 voice
603/924-9281 voice from New Hampshire
MEMBERSHIP FEE: $39 (one time)
AVAILABLE VIA: Tymnet
BAUD RATES (hourly)
NPT: $11 (300/1200), $12.50 (2400)
PT: $20 (300/1200), $22.50 (2400)

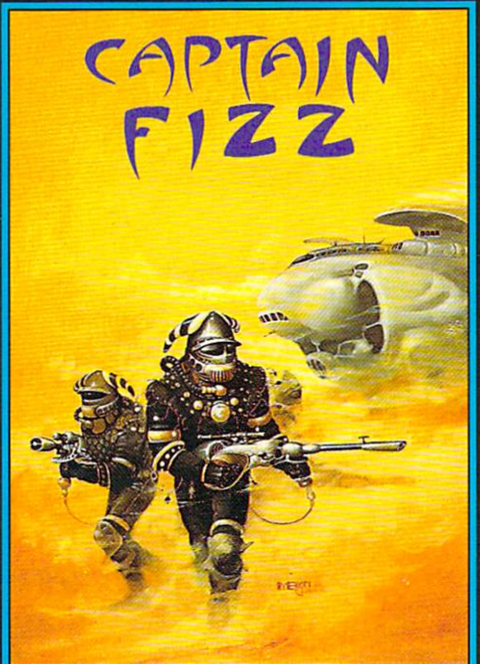
CompuServe

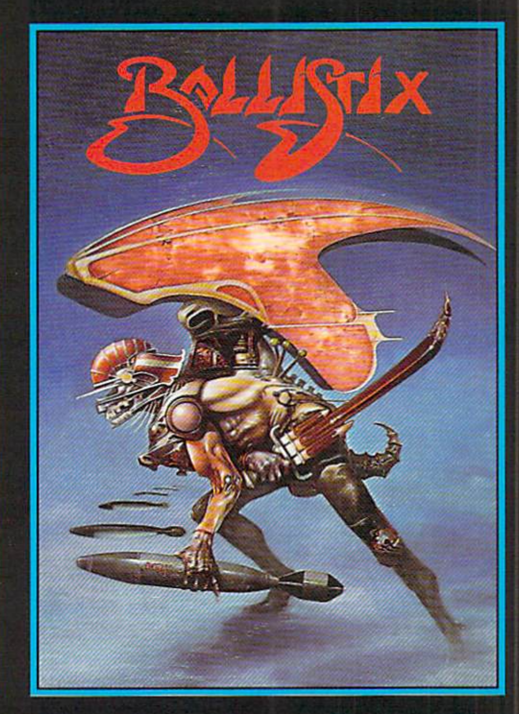
800/848-8199 voice
614/457-8650 from Ohio
MEMBERSHIP FEE: $39.95 (one time, includes $25 of on-line time)
AVAILABLE VIA: CompuServe direct lines, Telenet, Tymnet
BAUD RATES (hourly)
Any Time: $6* (300), $12.50* (1200/2400)
*Plus $.30/hr. for CompuServe phone lines
*Plus $2/hr. for Telenet or Tymnet (NPT)
*Plus $12/hr. for Telenet or Tymnet (PT)

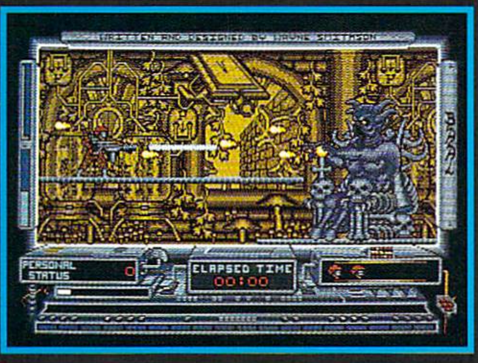
GEnie

General Electric Information Services
800/638-9636
MEMBERSHIP FEE: $29.95 (one time, includes two hours of free NPT)
AVAILABLE VIA: GEnie dedicated phone lines
BAUD RATES (hourly)
NPT: $5 (300/1200), $12.50*(2400)
PT: $35* (300/1200), $42.50* (2400)
*Plus $2/hr. from some outlying areas □

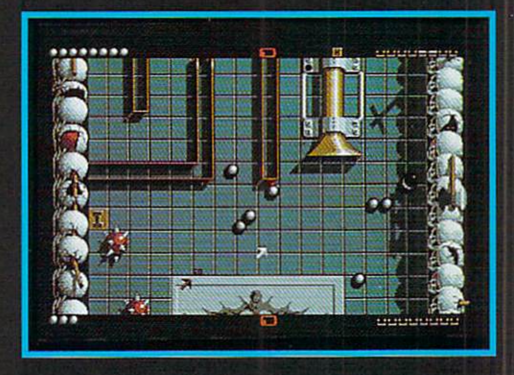












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- ★ 8 way ultra-smooth scrolling through 3 distinctive domains containing multiple levels.
- ★ Over 250 highly detailed screens, superb graphics and sound effects.
- ★ More than 100 monsters and 400 traps.

The future of the world lies in the hands of an elite squadron of men. YOU are the leader of the Time Warriors. Can you save the earth from the evil BAAL?

His army of undead have stolen an awesome weapon of destruction, a War Machine.

As leader of the ultimate battle fighters, your quest is to invade BAAL's domain, fighting off his monstrous demonic beasts to retrieve the War Machine . . . but . . . you must kill BAAL in the process.

Can you succeed? There is no option . . . the alternative is literally 'Hell on Earth'.

Screen Shots from the Atari ST version

AVAILABLE NOW ON THE PSYCLAPSE LABEL

CAPTAIN FIZZ
Meets The Blaster-Trons

The message is simple: co-operate or die!

It's double fun and double trouble all the way in Captain Fizz, the most exciting simultaneous two-player game you and a friend are ever likely to play. It's a whole new world of split-screen, high-speed action, as both of you take on the nasty Blaster-Trons infesting the planet Icarus.

Yup, it's a tough mission alright, but you might just win out with the right blend of co-operation, courage, laser-hot reflexes, tactical sense. . . and brains. The action is fast and furious in Captain Fizz, but if you can't work out the right tactics you'll both be dead meat.

There are 22 levels of savage and relentless action to battle through before you reach your objective, the central computer that's causing the evil infestation. You'll never get there, though, unless you put your heads together and co-operate; your buddy can't do it on his own, and neither can you. This is one program where even the easy games are hard. So remember — united you stand, but divided you fall. . .

Warning: this game is impossible to beat on your own.

Two joysticks required for two-player game.

Screen shots taken from the Atari ST version

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Ballistix is incredibly flexible, too. You can play against the computer or another player, set the speed if you can't stand the pace, define where the balls are fired and their velocity, rack up bonuses that will get you extra goals and then, at the end of an exhausting game, set your name in pride of place on the high-score table. And it's all played to the accompaniment of a throbbing sound-track and a crowd that applauds your every goal.

Ballistix is definitely not a game for wimps. It's tough, fast, challenging and incredibly competitive - in fact, it's just the kind of game you like.

Two joysticks required for two-player game

Screen Shots are from the Amiga version

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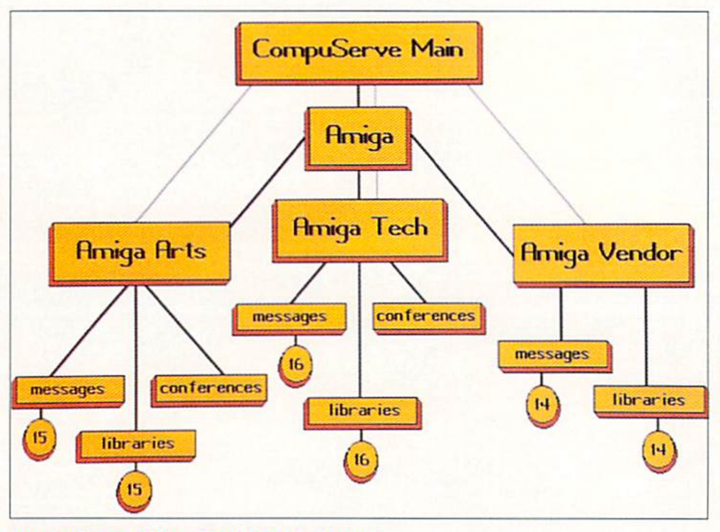
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days. The network also encourages impromptu sessions on off-nights; check the conference area at 10PM EST for someone to chat with.

The Amiga Tech Forum is designed for technical users. The message bases contain questions and answers on programming in a variety of languages, as well as Amiga hardware discussions. The libraries are filled with source code for a variety of languages, executable utilities, and so on. The weekly conferences often have well-known commercial programmers as guests, ready to discuss the inner workings of the Amiga.



CompuServe offers three Amiga forums.

The Amiga Vendor area is staffed by employees of commercial software companies. You can get on-line product support or new product announcements from companies such as ASDG, C Ltd, Impulse, New Horizons, Syndesis, Transactor, Gold Disk, Micro-Illusions, Avant-Garde, M2S, and MicroSmiths.

The Amiga Tech area is the network's strong point. CompuServe has been tested by time and much use, and learning your way around is not too difficult. In addition, CompuServe offers extensive non-Amiga services.

Getting Bigger All the Time: GEnie

The GEnie (General Electric) network is the new kid on the block, but is really trying hard in the Amiga area. GEnie has grown tremendously over the past two years. The Amiga area now offers a wide variety of services, an extensive software library, and two divisions.

The largest section, GEnie Starship RoundTable, is the users area, catering to people at all levels of experience. To board the Starship, type AMIGA from the main GEnie menu. This will bring you to the main Amiga menu where you can choose to enter either the Message, Library or Conference areas.

The Bulletin Board features 24 message areas, while the software libraries are classified into 18 different categories. In each library, files are displayed by date, starting with the most recently received files, so you can easily identify the latest uploads. Sample topics include: applications software, graphics and video, Workbench and the CLI, hardware, products wanted/for sale, user groups, tools and utilities, games, programming, and telecommunications. Star- ►

Alternate Sources Of PD Software

IF YOU DON'T have a modem, or just don't have the time, energy or patience to go on line and search out those software gems in the public domain, there is another method that is both easy and relatively inexpensive.

A number of companies, magazines, organizations, and individuals have compiled huge, disk-based libraries of public-domain software. You can order these disks from them for a nominal fee (which in some cases barely exceeds the cost of the disk, duplication and mailing charges). For catalogs and more information, contact:

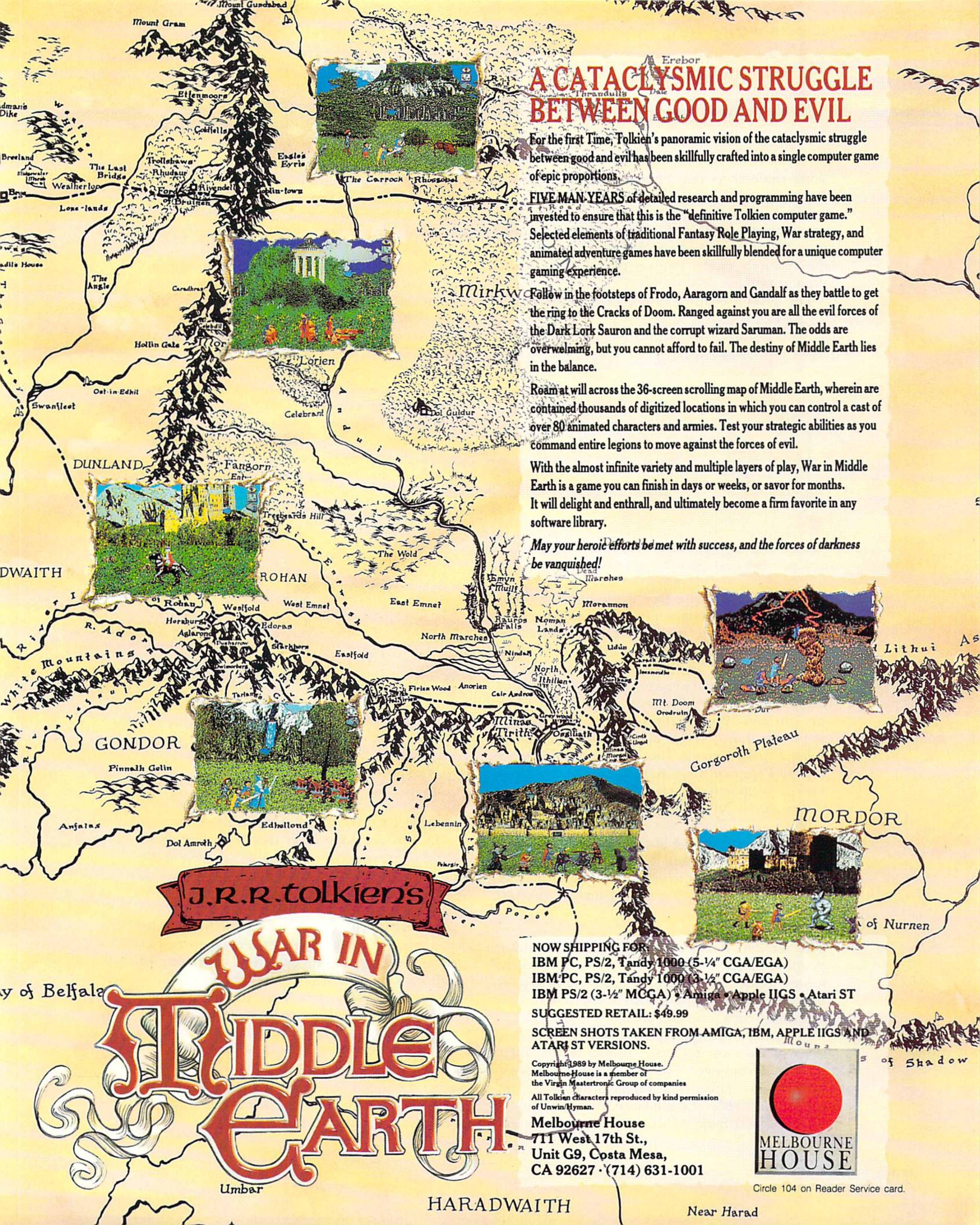
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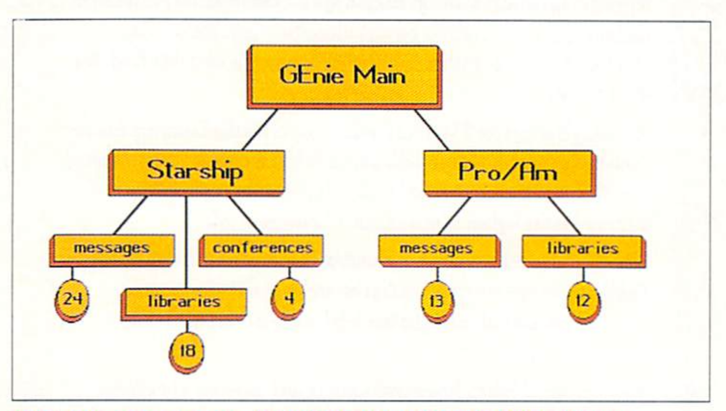
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Gorgoroth Plateau
White Mountains
Erebor
Rivendell
Dol Amroth

ship's conferences take place on Mondays (music), Thursdays and Saturdays at 10PM EST.

GEnie's second Amiga area, Pro/Am, is for Amiga programmers of all levels. Type PRO/AM from the main GEnie menu and you will be whisked away to this relatively recent addition to the GEnie Amiga support system.

The bulletin board area is broken down into 13 technical categories. Keeping the technical area separate from the standard user area works well for everyone. Techies get tired sifting through questions and comments on the latest arcade game to find a serious discussion, and casual users don't want to know anything about programming the coprocessor.



GEnie has separate user (Starship) and technical (Pro/Am) areas.

The Pro/Am area also has its own library where you can find 12 categories of source code and example programs. The library's sections mirror the bulletin board's, except Text Fragments replaces the Pro/Am Reception Desk and Flames is deleted. The weekly programmers' conference takes place on Wednesday at 10PM EST.

When you consider the low price of the GEnie service and its extensive libraries and message base, you can see why it is gaining strength so rapidly. The GEnie software is easy to use and maneuver in, making it a great place for the new on-line user to start.

Tech Talk: BIX

BIX (the Byte Information Exchange) is sponsored by *BYTE* magazine, one of the industry's most respected technical computer journals. True to its roots, BIX is essentially a haven for technical computerists. The Amiga area is no exception.

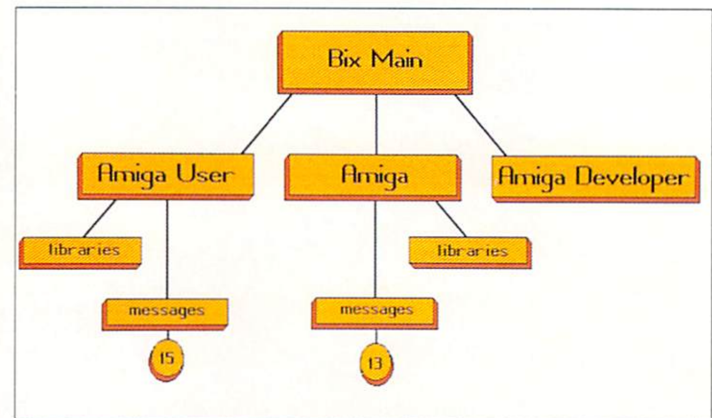
No matter when you log on, you are sure to meet some of the most respected people in the Amiga technical community. Software designers from virtually every company that supports the Amiga, employees of CATS (Commodore Amiga Technical Support), and many of the original designers and developers of the Amiga all flock to BIX's three Amiga areas. The largest is called Amiga and is the experts' section, the hangout for hardcore programmers. The 13 subareas range from assembly language to hardware to ARexx.

The Amiga.user section has a more general set (15) of subareas, including utilities (usually programmers), flames (complaints), fishdisks (PD software), and ARP (AmigaDOS Replacement Project DOS commands).

The Amiga.Dev area is the Developers Support section operated by CATS members such as Andy Finkle and Carolyn Scheppner.

Amiga areas on BIX also have their own libraries, which consist for the most part of utility programs, source code in a variety of languages, a few games, and files with complete listings of conferences and messages on a given subject.

Make no mistake about BIX, it is not for the average Amiga user. It is for the serious programmer and technical user. You don't have to be a world-class programmer to take advantage of its resources, but on BIX you are quite likely to receive help from world-class experts. BIX is the most expensive of the on-line systems, but for those who needs its services, it's well worth the price. If you are thinking of programming for profit, you should be on BIX.



BIX is the most technical of the four networks.

No matter which network you choose, you will be pleased with the results. Despite the on-line fees, you can download several programs from their libraries for the cost of one commercial program. If you cannot find a user's group in your area, you can get your questions answered in the message centers. Attending a conference brings the experts into your computer room. Membership does have its privileges. ■

Louis R. Wallace is a contributing editor to AmigaWorld. *Write to him c/o* AmigaWorld *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

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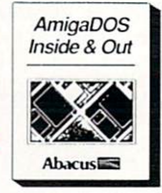
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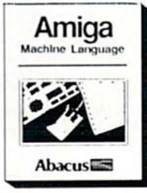


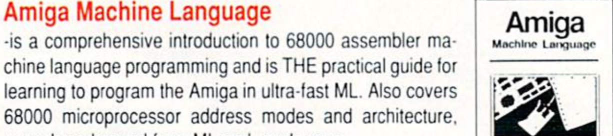
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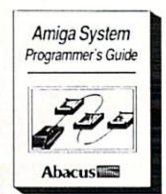




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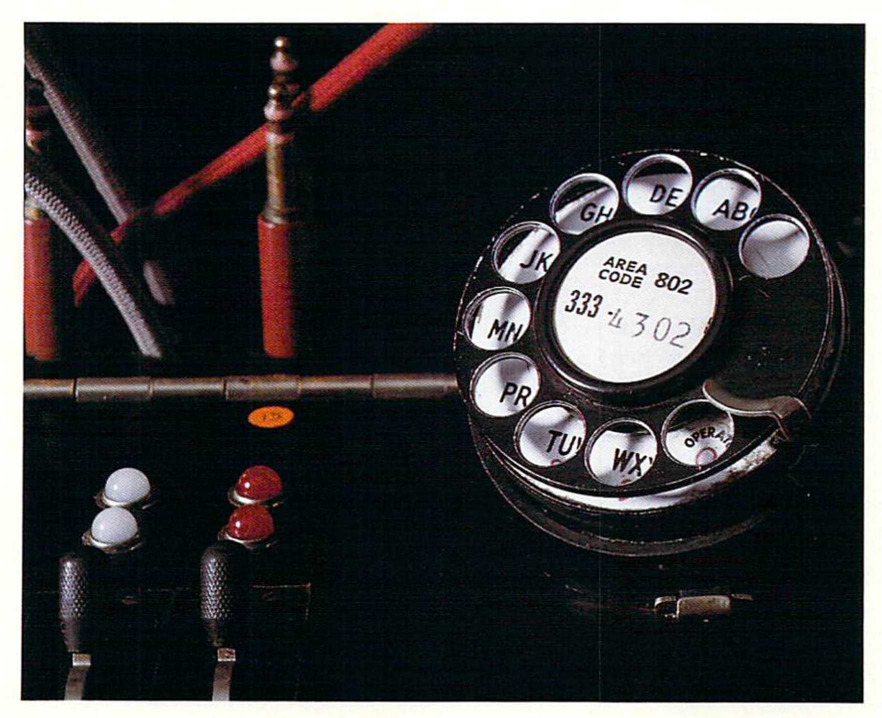
Learning the "signals" for several popular archiving utilities will let you compress files down to manageable size for faster on-line transfers. And the only things you'll sacrifice are big phone bills and wasted disk space.



By Jonathan Horne

FULL OF FREE software, the networks hold many pleasant surprises, but your subsequent telephone bills may hold a nasty shock. One way to cut costs is to shorten your uploading and downloading times by archiving files.

Archiving is the process used to compress a single file, a collection of files, or even an entire disk. For example, archiving a set of five 20K files (100K total) creates a single file that could be as short as 20K. Uploading the original files to a network could take you ten minutes. Sending the archived version would take only two. You can download compressed files equally quickly, then decompress them when time is less costly. The extent of compression depends on the contents of the file. For example, graphics files usually compress more than text files. No matter what the percentage, the savings will be reflected in your phone bill and on-line charges.



Archiving can also save you frustration caused by a clash of protocols when you try to run downloaded programs. AmigaDOS stores all its files with a checksum, a number that tells the computer how long a file is in bytes. If the checksum does not match the actual file length, then the computer will not execute the file and will display error message 121, "File not an object module." The Xmodem protocol, for example, sends data in chunks of 128 bytes. To make the final block received contain 128 bytes, the computer generates null characters called padding. When you try to execute the padded file, the computer ►

PHOTOGRAPHED BY FRANK CORDELLE

looks at the checksum, determines that the file is longer than it should be, and reports the error. By compressing files before transferring them, you will avoid the problem. When you restore the files to their original form, the archiving program discards any padding it finds.

The public domain and shareware offer four popular archiving utilities—ARC, PAK, ZOO, and WARP—all of which run from the CLI. Each program has a unique syntax and specialty, but all of them allow you to start manipulating files by learning only a few simple commands. When you begin, be sure the program you choose is in the current directory or in an accessible place such as the C directory. If not, specify the pathname to the program in your commands.

THE FOUNDER: ARC

ARC (available on Fred Fish disk #70) is perhaps the most popular archiving program available. One of the oldest utilities of its kind, ARC comes in versions for most microcomputers, including the Amiga, Atari, and IBM, letting you exchange files easily among machines. For example, you can archive a set of text files on an IBM, then decompress them on an Amiga. Do not be misled by ARC's non-Amiga origin; it is versatile, simple to use, and effective. To maintain compatibility with other operating systems, ARC limits your file names to 16 characters.

The syntax is:

```
ARC function archive.arc filename
```

Function is one of many commands, but only four are commonly used. A adds a file to the archive. D deletes a file from the archive. L lists files in an archive. X extracts files from an archive (breaks up the compressed file into its original components). Archive.arc is the name of the archived file you are working with, whether it already exists, or you are creating it. The name must end with the extension .arc. Filename is the path and name of the file, or files, you wish to extract from or add to the archive. ARC also supports the standard CLI wildcards # and ?.

If you download an .arc file called Graphics.arc, for example, you have several options for extracting and saving the image files it contains. To extract the pictures and place them in the current directory, type:

```
ARC X Graphics.arc
```

If you prefer, you can extract the files and send them to a separate directory. For example:

```
ARC X Graphics.arc DF2:Pictures/#?
```

To extract and save a single file called Lakeside.ham, for example, type:

```
ARC X Graphics.arc Lakeside.ham
```

Creating an archive is no more difficult than extracting files from an existing one. Suppose you collect icons and want to ARC them for posterity. To create an archive file, called icons.arc, of all icons on df0: and save it on your hard drive, type:

```
ARC A dh0:icons.arc df0:#?.info
```

Adding icons to the archive is equally easy. While ARC will not archive an entire directory automatically, you can archive the directory's contents file by file. For example, to archive Castle.info, which is in RAM:, type:

```
ARC A dh0:icons.arc RAM:Castle.info
```

At times, you may find archiving the contents of an entire disk and then deleting unwanted files easier than naming each file you wish to archive. Perhaps you would like to archive all your icons from DF0:, with the exception of Ugly.info. First, create the archive:

```
ARC A RAM:icons.arc df0:#?.info
```

then delete the unwanted files:

```
ARC D RAM:icons.ARC Ugly.info
```

To view the contents of an ARC file so you can decide which files to delete, type:

```
ARC L icons.arc
```

EASY-OPEN FILES: PAK

PAK (available on most networks) is the simplest to use of the four programs. The most interesting thing about PAK is that it creates self-extracting archives; execute a file and it will decompress itself. For example, typing icons.pak would extract all files from the archive icons.pak to the current directory.

There is, however, a price to pay for self-extracting files. When you create a PAK file, the computer includes the code that will perform the automatic extraction. This extra code, in turn, increases the length of the archive, thus making PAK the least efficient for conserving space and decreasing up- and download times.

The syntax is:

```
PAK archive.pak filename
```

As with ARC, archive.pak is the name of the compressed file. It always has the extension .pak. Filename is the name of the file you wish to add to the archive. You can specify a path for either name. For example, to create an archive in RAM: containing an IFF viewer and its icon, type:

```
PAK RAM:Viewer.pak Picviewer
PAK RAM:Viewer.pak Picviewer.info
```

To extract all files from a PAK archive, use the CLI ►

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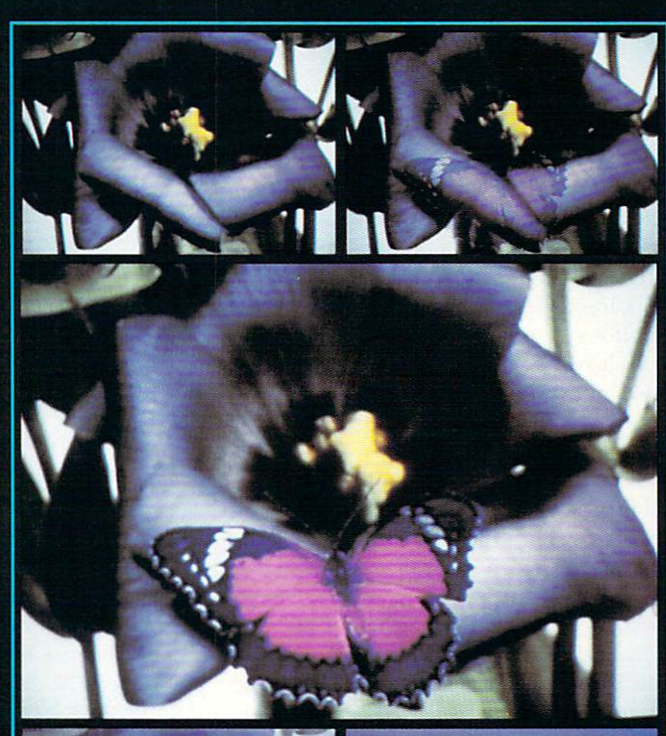
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Actual un-retouched photographs of composite video screens. The flower is live video, the Butterfly is created on the Amiga. **SuperGen** is overlaying the Butterfly onto the flower. The top sequence shows Amiga graphics fading in. The bottom sequence shows the Amiga Background fading in.



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Martin Hash of Hash Enterprises
Author of the Animation:™ series

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command CD to set the current directory to the files' destination, then execute the file. For example, to extract all files from Viewer.pak in RAM: to DF1:, type:

```
CD df1:
RAM:VirusKill.pak
```

A Menagerie of Options: ZOO

ZOO (available on Fred Fish disk #164) is similar to ARC, but offers more flexibility in its ability to manipulate files within the archive. Unlike ARC, ZOO does not restrict file names to 16 characters. You can also create subdirectories when extracting files, using the slash (/) options. A unique restriction is that ZOO cannot nest archives. For example, the archive Pictures.zoo could not contain the file icons.zoo.

The syntax is:

```
ZOO function archive.zoo filename
```

The essential functions are: a, which adds files to the archive; D, which deletes files from the archive; L, which lists files in the archive; x, which extracts files from an archive; and h, which displays a complete list of commands. Be careful when you type your commands. Unlike the other programs, ZOO is case sensitive; function commands perform different actions depending on whether they are upper- or lowercase. As always, archive.zoo is the name of the compressed file and must have the extension .zoo; filename is the path and name of the file to be extracted from or added to the archive.

Manipulating files is easy. For example, to extract all files from the archive icons.zoo in df0: to the directory icons, type:

```
CD icons
ZOO x df0:icons.zoo
```

To extract a single file, trashcan.info, from icons.zoo, type:

```
ZOO x icons.zoo trashcan.info
```

To add baseball.info to icons.zoo, type:

```
ZOO a icons.zoo Trashcan.info
```

To remove the icon dragon.info from icons.zoo, type:

```
ZOO D icons.zoo disk.info
```

If you can no longer remember what is in the archive, you can examine its contents by typing:

```
ZOO L icons.zoo
```

A faster way to decompress .zoo files is to use BOOZ (available on most networks). The syntax is:

```
BOOZ function archive.zoo filename
```

The function x extracts a specific file (filename) from a compressed file (archive.zoo) or an archive's entire contents; l lists a .zoo file's contents.

A Wrinkle in Silicon: WARP

While ARC, PAK, and ZOO will archive only individual files, WARP (available on most networks) will compress an entire disk, block by block, and output the contents to a single file. One of the advantages to this method of archiving is that when a file is decompressed, the resulting disk will be exactly the same as the original. In addition, you do not have to sort the files into the appropriate directories when you extract them or install the new disk with Workbench. To help keep your disk collection clean, WARP will not archive the SCA virus if it finds the code in a disk's boot block. Unfortunately, it cannot identify other viruses. (Because ARC, PAK, and ZOO archive files instead of individual disk blocks, they will not transmit viruses.) Bridgeboard owners will appreciate that WARP will archive non-Amiga disks, such as MS-DOS and Atari ST formats.

The syntax for creating a WARP file is:

```
WARP read start_track end_track archive.wrp
  nocomp nozero append mfm +text
```

To disassemble a WARP file use the syntax:

```
WARP write filename1 filename2 filename3
```

(When you create a WARP file, always insert the source disk in drive DF0:. When you extract files, the destination disk must be DF0:.)

Start_track is the track number to start reading at (for an entire disk, 0) and end_track is the final track to archive (for an entire disk, 79). Archive.wrp is the name of the archive file, which must end with .wrp; you can include a pathname. The option nocomp instructs the computer to archive the disk, but not compress it. Specify nozero and mfm only for non-AmigaDOS filing systems. Specify append to add data to an existing WARP archive. With +textfile you can designate the path and name of a text file to be displayed when the file is extracted (the text file must be available when you run WARP—RAM: is a good place to put it).

The multitude of parameters are easier to understand with examples. To compress an entire Amiga disk in drive df0: to a single file on df1: type:

```
WARP read 0 79 DF1:Diskname.WRP
```

or for just tracks 40 to 79 on DF0: to an existing WRP file in RAM: type:

```
WARP read 40 79 RAM:Existingfile.wrp append
```

To archive an entire MS-DOS disk in DF1: to an Amiga .wrp file on df0: type:

```
WARP read 0 79 df1:Filename.wrp mfm
```

To squeeze an entire Amiga disk in df0: into a single file on df1: that will display a text file before disassembling, type: ►



You Can't Buy Time.

You can't buy time, but you can save it if you have the right tools. WordPerfect Corporation's latest creation for the Amiga is WordPerfect Library, a collection of integrated programs to organize your appointments, notes and files. Whether you're a home manager or an office manager, Library was made for you.

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Of course, Calculator is as valuable in the office as it is at home. You can access the Calculator without exiting your document, and then save your current state in Calculator. When you flip back to your document, your calculation remains intact for easy reference.

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Circle 64 on Reader Service card.

```
WARP read 0 79 df1:Myfile.wrp +RAM:
  readme.txt
```

To disassemble any .wrp file from RAM: to df0: enter:

```
WARP write RAM:File.wrp
```

To extract three individual .wrp files from df1: to df0: type:

```
WARP write df1:File1.wrp df1:File2.wrp df1:
  File3.wrp
```

Click It in Place

If you wish to avoid the CLI totally, you have three options. ARCHA (public domain), Disk Magic ($49.95, DMH Technologies), and DiskMaster ($49.95, Progressive Peripherals & Software) all offer mouse-control of archiving programs. ARCHA is simply a menu-driven interface for ARC, PAK, and ZOO, giving you point-and-click control of their functions. You must have the three programs to run ARCHA. Disk Magic's gadgets let you archive, decompress, and list files with the accompanying versions of ARC, PAK, and ZOO. DiskMaster lets you control ARC with menus, but you must supply a copy of the program.

When choosing which program to use, consider the context of what you are doing. If you're archiving a disk full of subdirectores, or a non-standard boot block, then clearly WARP would be most appropriate. If you're merely archiving a couple of text files, then ARC or ZOO would be a better choice. Another important factor is confidence. Use the program you are most comfortable with and your results will be better. To further ease your fears, write-protect your source disk when archiving. Even the simplest of mistakes, such as having the wrong disk in the wrong drive, can easily wipe out important files. ■

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Jonathan Horne is active in telecommunications and has logged many on-line hours. Write to him c/o AmigaWorld *Editorial, 80 Elm St., Peterborough, NH 03458.*

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SPRUCING UP THE OLD BENCH—3*

Utilities 1.3

The 1.3 Utilities drawer is stuffed with goodies—a Calculator, Clocks, Notepad, ASCII text file browser, vegetable slicer, chef's knives. . .well, you get the idea.

By Mark L. Van Name and Bill Catchings

**Editor's Note: This month, team* info.phile *presents Part 3 of their latest AmigaDOS 1.3 "mini-series." While their previous collection ("Exploring AmigaDOS 1.3," Aug. '88–Dec. '88) focused on new or improved CLI commands, this series explores the other side of the AmigaDOS coin: the Workbench.*

IF YOU HAVEN'T already taken a look inside the Utilities drawer on Workbench 1.3, then you're in for a few surprises. It used to house the familiar Calculator, Clock, and Notepad. Those three are still there, but you will also find that two other old-timers—Say and GraphicDump—plus five brand new utilities have been added.

Not One, Not Two, But Three Clocks

Let's start with a look at the improvements to the old Clock utility. Just about everybody knows the Clock. You click on its icon, and an analog clock appears. You can use the Clock's sizing gadget to change its size, and, if you click anywhere in it, a Clock menu takes over the Workbench menu bar.

That menu now holds a few new options that we like a lot. For example, you're no longer stuck with the analog clock, which takes up a lot of precious screen space, unless you make it almost unreadably small. Pull down the Clock's Type menu, and you'll find two digital clock options: Digital 1 and Digital 2.

If you choose Digital 1, the analog clock disappears, and in its place a small, two-line digital clock appears. Its first line displays the time. If you've used the Clock's Date menu to turn the date display on, the second digital line displays the date. Otherwise, that line is blank.

Our favorite Clock option, however, is the new Digital 2. It gives you a one-line digital display in the title bar of your current window. You can, of course, move this clock anywhere you want. The Digital 2 clock does have one disadvantage, though: If you've turned the date display on, the clock alternates the time and date by flashing every few seconds, which can get annoying.

All of the other Clock options work with both digital displays, including display of seconds and 12- or 24-hour mode. The digital clocks will not, however, let you change their size.

A Digital Pointer

While we like these new Clock options, the new Amiga 1.3 time utility, ClockPtr, looks like the work of a programmer with, shall we say, too much time on his hands. ClockPtr's function is simple: It turns your mouse pointer into a digital clock whenever the Workbench backdrop screen is active.

To accomplish this metamorphosis, you first double click on the ClockPtr icon. (You can also run it from the CLI by using the command RUN CLOCKPTR.) Then move the mouse pointer out of the Utilities drawer and into the Workbench backdrop screen, click the left mouse button and, voila!, your pointer turns into a digital display. Of course, it only stays that way while your Workbench backdrop screen is active. Make another window, such as a Shell, active, and the pointer resumes its normal form.

Now try this. Move the pointer to the top left corner of the Workbench screen, and the pointer will change from a clock into an interval timer that displays the minutes and seconds that have elapsed since it underwent this miraculous transformation. Move the pointer to the lower part of the left side of the screen, and it shows the date.

Is this fun, or what? When you're done, double click again on the ClockPtr ►

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icon, and your mouse pointer will return to its normal form.

ClockPtr may be fun, but it's practically useless.

BUT WAIT. . .THERE'S MORE!

Much more useful is another new utility, MORE. MORE is based on a Unix utility of the same name. It is an ASCII file browser that lets you go forward and backward through ASCII files, as well as search for strings in those files. Because it only has to worry about reading files, it is faster than most editors when all you want to do is browse.

You can run MORE from either the CLI or the Workbench. To start it from the CLI, you only have to enter

```
MORE <filename>
```

where <filename> is the name of the file you want to display. It will show as much of <filename> as it can fit in your current CLI window. If you omit a file name, MORE will ask you for the name of the file you want to see. Be sure to give MORE enough of the full path name of the file so that it has a chance to find it. When in doubt, use the full path ►

Table 1. Commands used with MORE.

Keystroke	Function
return	Display the next line of text.
space bar	Display the next screen of text.
backspace	Display the previous screen of text.
<	Display the first screen of text.
>	Display the last screen of text.
%n	Where n is a number between 1 and 100. Display the screen of text that is approximately n% of the way into the file.
/<string>	Where <string> is a character string for which you want to search. Perform a case-sensitive search for <string> from the current spot in the file forward.
.<string>	Where <string> is a character string for which you want to search. Perform a non-case-sensitive search for <string> from the current spot in the file forward.
n	Find the next occurrence of the string for which you last searched.
q	Quit MORE.
CTRL l	Refresh the screen.
h	Display MORE's help message, which is just a list of possible commands.
E	Edit this file with the text editor associated with the EDITOR environment variable.

name, and you can't go wrong.

You can start MORE from the Workbench in either of two ways. First, you can just double click on its icon. It will then bring up a full-screen window, give you some introductory text about itself, and ask you for the name of the file that you want to display. Once again, it's best to use the full path name.

The second Workbench option lets you directly display files that have Workbench icons. You have to be careful, however, because many such files already have tools attached to them, so that if you click on their icons, those tools, not MORE, will start. To start MORE on a file, first select the MORE icon. Then hold down the Shift key and double click on the file's icon. MORE will display a full screen of that file's text.

The standard MORE display is fairly simple. It fills all but the bottom line available to it with text from the file. It uses the bottom line for messages and prompts. When MORE starts, that bottom line will show the message

--- More (<*nn*>%) ---

where <*nn*> is the percentage of the file that you have seen so far. (When you're at the end of the file, <*nn*> will be 100.)

Now you can browse the file. MORE offers 13 commands, each of which you trigger by pressing a single key. Each command moves you around in the file and shows you a different part of the file. Table 1 summarizes these commands; the descriptions in the table are fairly self-explanatory, but there a few additional facts worth noting about some of the commands.

For one thing, some of them don't work in certain situations. One restriction revolves around the use of AmigaDOS pipes, which we discussed in a previous column ["Handle With Flair," info.phile, Feb. '89, p. 50]. MORE can display text from a pipe, but it can go only forward in that text. You cannot, therefore, use the previous-page or first-page commands with pipes. Also, MORE will not let you jump to the last page of text from a pipe, which makes sense when you realize that the pipe may not yet have received its last page of text.

The E command gives you a nice way to invoke an editor on the file you're browsing, but it has two restrictions. First, it works only when you start MORE from the CLI or the Shell. Second, for it to work, you must have assigned to the EDITOR environment variable the full path name of the editor that you want to invoke, such as WORKBENCH:C/ED or EXTRAS 1.3: MEMACS. You do so with the CLI SETENV command, as in

SETENV EDITOR C:ED

If you try the E command without having met both of these conditions, nothing happens. If everything works and you are able to edit your file, when you finish editing and exit the editor, you will return to MORE.

You should also be aware that if you accidentally hit the ESC key, MORE will appear to hang. Don't worry—it's not really dead. Just type either q or h and you'll be back in business.

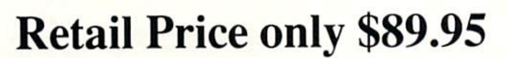
Now How Much Would You Pay?

We're still not finished with all the improvements to the Utilities drawer. Next time, we'll look at a few more new utilities and other 1.3 goodies. ■

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Carrying Bags for
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☛ Commisioner's Disk .... Call
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Deluxe Paint II $84
☛ Deluxe Paint III .... *Soon!*
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- ☛ Test Drive II $30
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- Diga $56
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- ▼ Modeler 3D $64
- Ports of Call $36
- Sonix $49
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- New! Easy Titler $34

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- New! AMAS *In Stock!*
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- ▼ Tanglewood $27
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- New! Photon Vid.Transporter Call
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- ☛ Planetarium $51
- Romantic Encounters $29
- Tracers $27
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- Forms in Flight 2.0 $80

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MICROSMITHS
- TxEd Plus $57

MICRO SYSTEMS SOFTWARE
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- Deja Vu $32
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- New! Hostage *In Stock!*
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- New! Joker Poker $33
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- New! Road Raider $27
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- New! Charon 5 *In Stock!*
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- Raw Copy 1.3b $39

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- New! ProScript $33

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- Digi-Paint $45
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- Digi-View 3.0 Call
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- Sound Oasis *In Stock!*
- Dynamic Drums $59
- Dynamic Studio $144

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- Breach Scenario $19
- Paladin $29
- Paladin Scenario $19

OPCODE SYSTEMS
- ▼ Music Mouse $49

ORIGIN SYSTEMS
- New! Auto Duel *In Stock!*
- Moebius $38
- Ogre $25
- Ultima III $29
- ▼ Ultima IV $39

OTG
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- Nimbus 1 $99
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- CLImate $25
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- DR Term Pro $79
- IntroCAD $63
- Mathamation Call
- MicroLawyer $42
- Pixmate $54

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- ☛ Aquaventure Call
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- New! Captain Fizz *In Stock!*
- New! Chrono Quest $34
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- New! Fire Brigade $33
- New! Menace $24
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- Terrorpods $28

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- Black Lamp $19
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- New! Virus $21

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- Ganymed $22
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- DeluxeHelp Call
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RIGHT ANSWERS GROUP
- The Director $49
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- Foundation Waste $24
- ☛ I Ludicrous Call
- New! Phantasm $24
- New! Space School Simulator $24
- New! Synapse *In Stock!*
- New! Transputer $24

SEDONA SOFTWARE
- Money Mentor $74

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SEVEN SEAS SOFTWARE
- Color Commander $21
- Doug's Math Aquarium $59

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- New! DNA Music $15
- New! Fractal Music $17
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- Lotto Magic $19

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- ▼ L Debug $76

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- MultiPrefs $23
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SW INTEGRATIONS
- Oriental Art $29

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- New! Tele Epic *In Stock!*
- Telegames $26
- Telewar $29
- New! Telewar II *In Stock!*

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- New! Microfiche Filer Plus $115

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- Patch Editors Call
- Texture *(For Real!)* Call

SPECTRUM HOLOBYTE
- New! Falcon — *HOT!* *In Stock!*
- Solitaire Royale $22
- New! Tetris $25

STAR SOFT
- Formula One $21
- ▼ Frost Byte $21
- Seconds Out Boxing $21
- Stock Market Game $19
- Santa Paravia *In Stock!*

SUBLOGIC
- European Scenery *In Stock!*
- Flight Simulator 2 $32
- Japan Scenery *In Stock!*
- Jet $35
- Scenery Disk 7 or 11 $18
- ☛ Scenery Disk 9 Call

SUNRIZE INDUSTRIES
- Desktop Artist $23
- Studio Magic $75

SUNSMILE SOFTWARE
- Extend $29
- Home Inv Manager $27

SYNDESIS
- Interchange $40
- Interchange Object $15
- New! InterFont $82

TAURUS
- X-Cad $425
- Acquisition Call

TDI SOFTWARE
- Modula-2 Call

THE OTHER GUYS
- Promise $39
- Match It $29
- Reason Call
- Synthia $75

THREE-SIXTY
- Dark Castle $29
- New! Warlock $24

TIGRESS
- Diskwik $36

TITUS
- Crazy Cars $27
- Fire & Forget $27
- Off Shore Warrior *In Stock!*

TRUE BASIC
- Developer's Toolkit $39
- Runtime Package $109
- True BASIC $74
- Libraries (each) $39

TSA MEDIA
- New! Boomer-Aid *In Stock!*

UNICORN
- Adv. of Sinbad $35
- Aesop's Fable $33
- All About America $42
- Animal Kingdom $35
- Arabian Nights $35
- Fraction Action $33
- Kinderama $33
- ☛ Logic Master Call
- Magical Myths $36
- Math Wizard $35
- Read & Rhyme $33
- Read-A-Rama $33
- Word Master $35

UNISON WORLD
- Art Gallery 1 or 2 $20
- Fantasy Call
- Fonts & Borders Call
- Print Master Plus $33

VEGA
- New! AmiKit $29

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- Data Disks for PageFlipper Call

WILLIAM HAWES
- ARexx $39
- W-Shell $39

WORDPERFECT CORP.
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Sage Advice

On the eve of your quest, listen to one who has gone before.

By B.G. Hunter

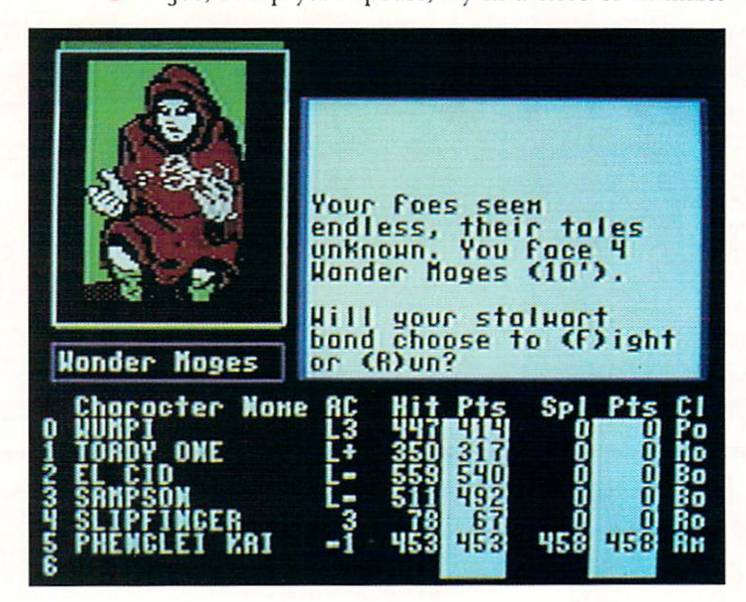
A FIERCE LATE-NIGHT battle in Oscon's Fortress has left me with only two stalwart adventurers. If I can just get to the temple in Corinth, I can resurrect my dead companions, and, finally, go to sleep. To spare you from the horrors I have endured, I must fight my fatigue and pass on the wisdom that I have gathered while playing The Bard's Tale II: The Destiny Knight (Electronic Arts).

My first piece of advice is a warning: To complete Bard's Tale II, you must give up your life. Quit your job, dump your spouse, lay in a store of Twinkies and Jolt Cola, and don't leave your Amiga for a fortnight or two.

If you can't afford that much time, cheat: Buy the clue book (Electronic Arts, $12.95). The game is huge, and you'll be glad for the help. Even if you followed the hints step by step, developing your characters and fully exploring the six towns, seven castles, tombs, and dungeons could still take forever. Never read the hint book completely! If you buy it, read it only when you get stuck. Think of it as that extra shot of adrenalin that you need to get out of a seemingly impossible jam at 2AM.

You don't have to stay up that late. You can play an hour here and an hour there, saving your game as you go, and enjoy the game for many months. Save your game often, but only when you are at a desirable point. Each time you save a game, it replaces the one you last saved. Saving the game right before you die can be devastating. Each time you start over, you will probably die again quickly.

As you play, you'll notice Bard's Tale II accesses the disk every time you enter an empty building or fight a bad guy. If your Amiga has more than 512K of memory, you can cut down on those incessant accesses by making AmigaDOS cache (store) in memory the information for the rooms and monsters you most recently saw. The easiest and cheapest way is ►



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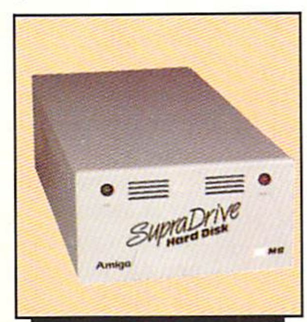
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B905

with ADDBUFFERS. On your copy of The Bard's Tale II disk named BARDSDK, edit the file s/startup-sequence with a text editor, such as AmigaDOS' ED. Right before the line that reads:

bard

insert the following:

"Workbench 1.2:c/ADDBUFFERS" df0: 200

(If your Workbench disk is not called Workbench 1.2, use its proper name instead.)

Insert your Workbench disk, and AmigaDOS will set aside 200 buffers, or 100K, of memory for a cache for your internal floppy drive. If you have more memory, you can make the cache even bigger. In addition to making your life easier, this technique also cuts down on the wear on your floppy.

Does Everyone Like Khaki?

In the beginning, assemble a full party of seven adventurers. Once all of your characters have progressed to level six, however, cut back to only six characters. You can fill the empty slot with one of the folks you meet in the dungeons, or have one of your magic casters create someone. Some of those dungeon characters can really help you, and some are essential. You may even want to let them lead when the clues hint at that idea.

Don't be stingy with your party; outfit them completely. It took a long time for me to find out everything that they can wear, and I wish I'd learned it earlier. Although there are some limits on what the different classes of characters can wear, most can sport armor, a shield, a helmet, and gloves.

Along with clothes and armor, carry lots of money; the locals don't accept American Express. 50,000 pieces of gold isn't too much, especially when you're exploring the Tombs. If someone offers to sell you something, even at an exorbitant price, buy it. You'll be glad you did.

You'll need room for all the stuff you buy, so make sure that everyone can carry new inventory—especially when you're in Dargoth's Tower. Someone may have a gift that it might be deadly not to have later on.

The single most important piece of gear is one that you, and not your characters, have to carry: a map. Before you even boot up the game, rush out and buy graph paper, lots of graph paper. As you explore, draw your maps in pencil, because you will make mistakes. The easiest way to minimize your errors is to establish a consistent pattern. I like to move, then immediately draw what I see. I always keep track on the map of where I am and what direction I'm facing.

I'll give you the basic parameters to get you started. All of the towns, dungeons, crypts, and towers are 22 units square. The wilderness outside the towns is 48 by 32 units. Unfortunately, the wilderness wraps around. The game tells you, if you ask, how many units east and north of Tangramayne (the town in which you begin) you are located. Because of the wrapping, however, if you are very far east or north you may actually be only a few squares away from the town on the west or south side. Even the dungeons sometimes wrap around, so be careful there, too.

If you do get lost outside, you can always type a question mark to find out where you are, what direction you're facing, and what time it is. Once I got horribly lost and forgot this command, and nearly everyone in my party died.

In addition to maps, keep lists. Jot down everything you see written on the walls and everything you're told. Keep track of the various monsters' features, such as how many hit points they have and whether they can cast magic. It always helps to know your enemies the next time you encounter them.

As you play, explore completely and slowly. Step everywhere you can, or you might miss an important clue, or fail to encounter someone who could have helped you. Don't try to stretch beyond the level of your characters. If you do so, you'll die, and often quickly.

Start out by thoroughly exploring Tangramayne for at least one experience level. Then, move outside the town and check out the entire area. The monsters are not too tough to handle in either place during the day. When your characters achieve level three or higher, hit the dungeon.

If your characters are getting beaten up, run away! Don't be too embarrassed or too proud—run and stay alive. Always try to make it back to the safety of the Adventurer's Guild.

Above all else, remember that it is only a game. You *will* need to sleep every now and then.

May your encounter with the evil archmage Lagoth Zanta be a successful one! If not, restore your game and try again . . . and again . . . and again.

Although not the type to be caged in an office, B. G. Hunter does skulk in occasionally to pick up his mail. Write to him c/o AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

The Bard's Tale II: The Destiny Knight
Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
415/571-7171
800/245-4525
$59.95
(Clue book: $12.95)
No special requirements. ►

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HYBRIS

By Denny Atkin

HYBRIS IS CLOSE to the ideal execution of the vertical-scrolling blast-fest.

Your mission is the old "shoot everything," but Hybris adds a few unique elements to the formula. As J.P. Maverick or K. Lovett, you begin by flying over a beautifully-rendered desert landscape, zapping alien spaceships and ground turrets. Your ship has two power configurations—one for maximum shot power, and the other for a wide shot spread. If you shoot one of the power cubes that fly by and capture the ship part inside, you increase your ship's firepower and missile coverage. By the time you capture the final power cube, your ship has undergone as dramatic a change as transforming a Sopwith biplane into an X-Wing fighter.

You will need the extra power. Surviving the desert thrusts you into ocean combat, where submarines pop up, shoot at you, and submerge before you get a chance to get off a shot. The third and final level, a stunning and imaginative alien landscape, adds a number of ground-based opponents who not only have more firepower, but take a number of shots to destroy.

Hybris is challenging but tameable. An options screen allows you to change the number of ships, frequency of alien shots, and other variables that will make the game easier for beginners. You also have three smart bombs, which destroy everything on screen. To keep your thumb out of a splint, hold down the joystick button for rapid-fire missiles. Finally, if you hit the fire button within nine seconds after the end of a game, your new game will start at the spot where you died, rather than the beginning.

The only complaint I have is the mouse. Response is sluggish, and the ship doesn't move in exactly the same direction as you move the mouse. Use the joystick to avoid the problems.

With sensational graphics, nonstop action, a super stereo sound track, and the ability to start a new game where you last left off, Hybris makes you glad that your Amiga doesn't have a quarter slot.

This desert is far from deserted.

Hybris
Discovery Software International
163 Conduit St.
Annapolis, MD 21401
301/268-9877
$39.95
No special requirements.

CHARON 5

By Chris Dickman

TO THE ANCIENT Greeks, Charon was a lower-world deity who accompanied the souls of the dead to the infernal regions. Ironically, my experience with Charon 5 was certainly less than heavenly.

First, the game failed to load on my reliable Amiga 1000 with a Spirit memory board. A call to Mindware International confirmed that Charon 5 was not compatible with my system's configuration. Great. On an Amiga 500, the program did indeed load, but, in retrospect, I almost wish it hadn't.

The game's premise is no more or less preposterous than most games on the market. You are on a mission to save a group of scientists who are imprisoned in the depths of a mysterious spacecraft. You must reassemble destroyed airlocks to descend to the level of the scientists and free them. Yawn.

The playfield is a maze, not all that different from the old Pacman formula, through which you guide your digital alter ego, a H.U.M.A.N. (Highly Usable Maneuverable ANdroid), represented by a colored disk. Dull, but Charon 5 is indeed fast; movement between screens is almost instantaneous. As you wander the maze, swarms of buzzing little ►

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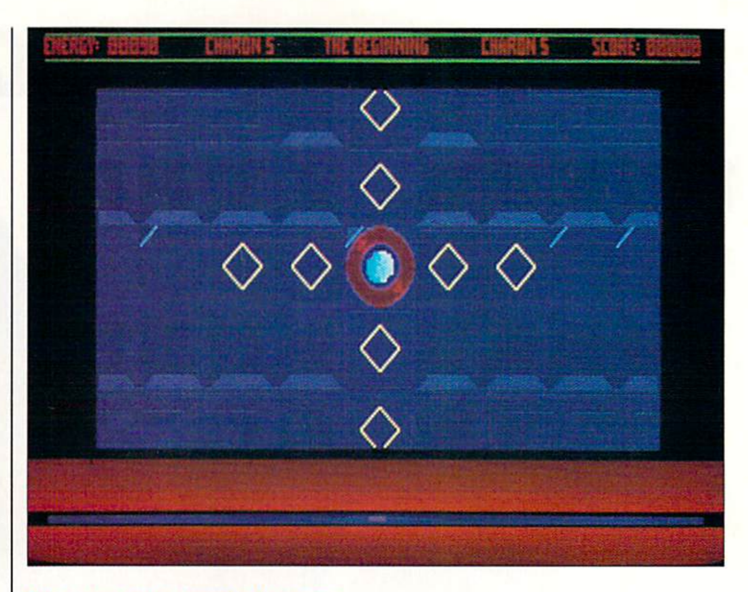
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Pick your path through the maze.

nasties attack you periodically. You can fire at them, but only in the direction you're traveling, which makes effective combat impossible. The screens all look the same, with no surprises, no interesting challenges to overcome, no animation, and with about three sound effects...yawn.

Supposedly, you can collect the components necessary to rebuild the destroyed airlocks, but the limited documentation doesn't tell you how. I wandered the maze in vain. Games are supposed to be fun—if I want to work I'll use a spreadsheet. You're told that by stopping on a diamond shape in the maze you'll be asked if you'd like to know where the components are on your level. Wrong. You actually receive some ambiguous messages whose import is not mentioned in the documentation (a single sheet of paper packed with tiny type in three languages). I could go on but I'm getting so sleepy...yawn.

While the speed of Charon 5 shows off Mindware International's memory management techniques, it does not make for a satisfying game. It should either be completely overhauled, along with its documentation, or placed in the public domain. It's amusing that Charon 5 is copy protected. The company needn't have bothered.

Charon 5
Mindware International
110 Dunlop Street West
Box 22158
Barrie, Ontario
Canada L4M 5R3
705/737-5998
800/461-5441
$34.95
Joystick required.

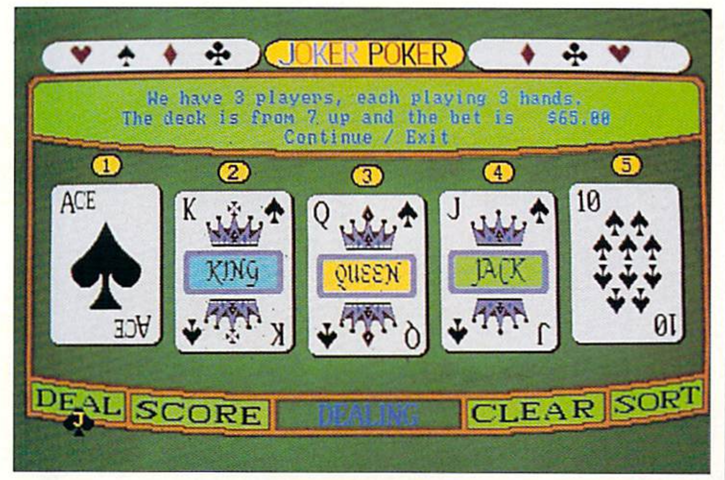
AUSSIE JOKER POKER

By Louis R. Wallace

THE FOLKS FROM down under have put a new face on five-card draw poker with Aussie Joker Poker.

Besides letting the Amiga do all the work of shuffling and dealing, the game changes a few of the rules of regulation poker. For example, you play for points, not money. Each

poker hand is worth a number of points; a single pair carries the lowest value and a royal flush, the highest. When you receive your five cards you can keep or discard any, or all, of them. If you draw, you must improve on your previous hand or you are "busted." If you do make an improvement, you can score the hand or try discarding and drawing once more. Again, you must im-



Watch out for the old ace-in-the-buffer trick.

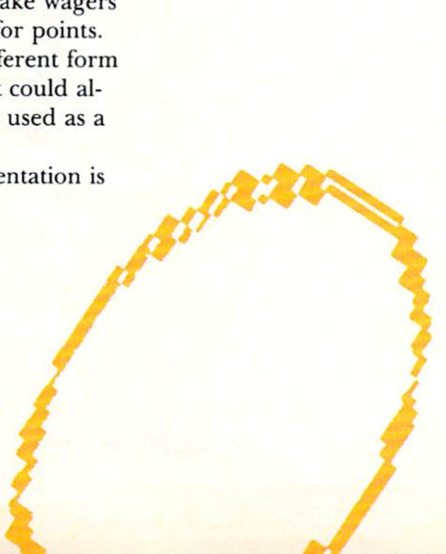
prove or lose everything. The rules increase the possibilities for you to get a better hand, but every draw also increases the odds of busting.

You can customize the game even further. For a chance at higher points, you can vary the number of hands each person can play per round. You control the number of cards in the playing deck by specifying which card will be the lowest card. In the gambling mode, you make wagers instead of playing for points. In reality just a different form of scoring points, it could allow the game to be used as a real gambling tool.

The game's presentation is satisfactory but not stunning. The backgrounds are colorful and the cards realistic. The sound effects are weak, but skill and chance are the important aspects, not hi-tech flash.

I enjoy a good game of poker and was more than mildly interested in Joker Poker. It is no better than the many other public-domain and commercial poker games available, but the multiple-player (from two to 90) option should make it popular at parties.

Aussie Joker Poker
Joker Software International
distributed by Mindscape
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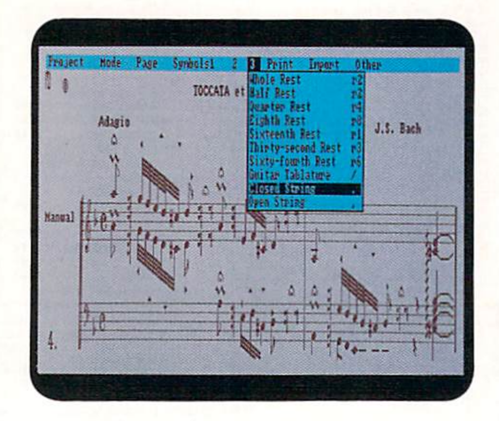
Continued from p. 14
who want to study up on music-notation conventions.

I Write the Songs

The Copyist's score-editing capabilities are thorough and of near-professional quality. Score-writing begins with an on-screen set of staves—the computer equivalent of a blank sheet of music-manuscript paper. Manuscript layouts can be as simple as a piano grand staff with bass and treble clefs in 4/4 meter, and as complex as a multi-staff orchestral score in mixed meters with percussion parts.

The program contains an impressive library of notation options. These include fundamental characters (note heads, sharps, flats, crescendo, forte, piano, and so on), other essential symbols (segno, grace note, coda, alto clef), and specialized marks (guitar tablature with symbols for closed and open strings, piano damper on and off, turn, mordant, drum note head, and closed and open diamond).

In Standard editing mode, you choose a symbol from a pull-down menu or by pressing a key. To place it in the on-screen manuscript, you position your cursor with the mouse or arrow keys. A few options—left and right bar lines, brackets, note duration, numerals, and the ten definable symbols, for instance—are available only from the keyboard. You can perform regional cut-and-paste operations via mouse, and a convenient



Do you hear what I see?

pop-up menu lets you specify symbols for editing. For example, you can erase note stems from a selected area without affecting ledger lines or note heads.

Other editing modes are Text mode, which allows you to enter words and numbers in six type faces (normal, bold, italic, bold italic, compressed, and double width), and Keyboard mode, with which you can enter notes from the computer keyboard. (The Copyist unfortunately cannot accept MIDI keyboard input directly.) Finally, Join mode supplies ascending and descending beams for keyboard-entered notes.

The transcription process is as complicated as it sounds. The Copyist has the power and ability to notate all but the most unconventional scores, but that flexibility is keystroke intensive. Flipping pages in a score demands at least two strokes, and entering a single note requires several steps: You position the cursor, choose a note head, select a stem, determine whether the stem is ascending or descending, and decide whether it stands alone or is beamed to another note. Fortunately, a macro-recording feature lets you recall commonly used keystroke combinations and thus increase your efficiency. Because there is no way to edit macros after they have been recorded, you may want to practice before committing to disk.

The Copyist's scores look even better in print than on the monitor. Draft mode gives you a credible representation, although some compromises are made for the sake of speed. The Epson print utility uses smoothing and double striking to produce elegant, high-contrast, near professional-quality manuscripts. The program does take some time to set up the job, but print speed is very reasonable. I also tried using The Copyist's definable print mode—in this instance with a Commodore MPS 1000. While I could access the printer via other programs, however, printer-computer communications did not take place under The Copyist.

From the Stage to the Page

Most musicians, I suspect, will not use The Copyist as a musical typewriter so much as to transcribe music already "recorded" with MIDI equipment.

The Copyist accepts MIDI files from

Dr. T's KCS, and you can import SMUS files generated with note editors (such as Aegis' Sonix or Electronic Arts' Deluxe Music Construction Set) as well, to fine tune the notation and take advantage of The Copyist's high-quality printout. Importing files is a two-step process: You produce a Copyist stream file from an .ALL, SMUS, or MIDI file, and then read it into the editor.

Bringing music data into The Copyist is not quite a load-and-go proposition. MIDI files created with KCS, for example, must be in the form of .ALL files. Also, you must transfer KCS song files to tracks in the KCS Track mode before importation (fortunately, KCS can do it automatically). If you have pieced together a score in KCS's Open mode, however, you will have to cable your MIDI-Out to your MIDI-In and use loop-back recording to prepare a file for The Copyist. You must carefully quantize a score before importing, too, as inaccurate and non-metrical rhythms can prove confusing for The Copyist.

Even so, the program is surprisingly intelligent about the intricacies of musical notation, and two menus of pre-import choices permit you to boost that intelligence. In many cases, you can sight read a Copyist-notated MIDI file without additional editing. If you want totally accurate notation, however, you must do a lot of massaging. I went through several trial-and-error rounds with a Sonix-composed SMUS file in 6/8 meter before arriving at an acceptably translated (but not perfect) Copyist file.

Using Synth to export .ALL and MIDI files is less complex but more time consuming. Setting the process in motion is a matter of making a few menu selections. Depending on the length of the file, though, the program can take ten minutes or more to convert the data.

The accuracy of this input/output system is excellent overall. To test it, I composed a piece in KCS and imported it to The Copyist (the notation was quite accurate). Then, I printed the score, cleared the manuscript, and entered the notes into the editor by hand. I later transferred the music back to KCS and found that the result was virtually the same as the MIDI-recorded original.

Facing the Music

The Copyist plays just a few sour notes. Using the program effectively is sometimes agonizing, and even simple operations can require several keystrokes. Keyboard commands are complex and not intuitive, even though some matches are mnemonic. The Copyist is highly capable, but to even begin to master its potential you must surmount a steep, grueling learning curve.

While eccentricities were the exception, The Copyist sometimes locked up or crashed when I was multitasking with KCS in my three-megabyte A2000. On one occasion the Standard mode editor refused to tie notes from the end of one grand staff to the beginning of another; instead, it consistently positioned the tie in an unrelated location.

If you intend to export your notated ►

scores to MIDI files, you must vertically align notes very carefully. Synth exports rhythms according to their relative physical position, and sloppy alignment results in disaster.

Finally, I wish The Copyist and Synth had the ability to export SMUS files. It would be a treat to use those programs as universal music-file translators—to record MIDI sequences with KCS, bring them into The Copyist, then use Synth to turn them into SMUS files that your friends could play using other programs.

The Copyist Professional is not for the casual user. Hobbyists who just want to input piano scores would be better off with Sonix or Deluxe Music Construction Set—programs that are less capable but far easier to use. MIDI professionals who need to see as well as hear their compositions, however, should consider it, along with paper composers who are ready to break with their pencils and embrace the latest in music-notation technology. The Copyist is a vital tool for pros.

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MediaPhile

Make a great show for a little dough.

By Bob Ryan

ARE YOU CONFUSED about hardware requirements for setting up a desktop-video system? Are you put off by the five- and six-figure price tags of sophisticated editing systems? MediaPhile, from Interactive MicroSystems, answers both these concerns. In combination with a modestly priced videotape deck or two, MediaPhile turns your Amiga into a very capable low-end video-recording and editing system.

A Cast of Thousands

There are a range of offerings in the MediaPhile product line. Interactive MicroSystems sells everything from just the MediaPhile software and control unit (for those who own compatible decks) to entire systems that include videotape recorders and Amiga computers as well. In my review, I used the MediaPhile MP_1.3M Infrared Control Unit and software ($275) and MediaProcessor software ($149) to control a Sony CCD-V9 8mm Camcorder and a Sony EV-S1 8mm tape deck from an A2000. (Because the A2000 and A500 provide video out in monochrome only, you need an RGB encoder to film in color with these Amiga models.)

MediaPhile MP_1.3M connects to your Amiga via the second mouse port and the left audio port; it provides four connections. For each videotape unit, one connector sends commands to the deck (via the Sony S Port, in my case), and the other keeps track of the recorder's counter location. Thus, the MediaPhile software can control the decks while monitoring the position of the heads. With an infrared unit like the Sony EV-S1, you can relay commands to the decks via the MediaPhile infrared LED as well.

As with all the recorders MediaPhile supports, the Sony decks I used are not manufactured with connectors to relay counts to external devices. Interactive MicroSystems will modify your deck to provide this capability for $66, and if you prefer to make the alterations yourself, the company will sell you the necessary materials for $30. (Interactive converts VHS and SVHS decks, which require further changes, for an additional $45.)

Under My Thumb

The MediaPhile software performs two primary functions: MediaController teaches your Amiga the infrared signals that control you decks (and then hands over the reins), and MediaRecorder lets you record single-frame animations created with VideoScape 3D (Aegis) and Sculpt-Animate 3D (Byte by Byte).

Controlling a deck using MediaPhile is simple. The software displays a window containing buttons for all of the unit's ►

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features, which you click on to regulate. The MediaController software directly supports many tape devices, but by using the learn mode, you can control virtually any other infrared-capable deck.

The most useful feature of the basic MediaPhile system is the ability to record animations as they are rendered. Thus, your animations are not restricted by disk-storage space or by the amount of memory in your machine. The MediaRecorder software records a frame once your animation program has rendered it, advances the videotape, and records the next frame. I tested this capability with VideoScape 3D.

Consumer decks are not single-stepping recorders and cannot advance precisely to a particular frame. MediaPhile gets around this limitation by introducing a backspace into the recording process. When the program detects that the animation program has finished rendering a frame, it sets the deck to record and then reverses, so that the net number of frames recorded is two. (This is the precision limit of the Sony EV-S1 I used. SVHS decks can approach this level of precision; VHS decks are much less precise.) In effect, when using the EV-S1, MediaPhile records one animation screen onto two video frames. To view or dub the animation at its intended speed, you simply use the EV-S1 double-speed playback option.

Because single-frame recording involves numerous starts and stops, I stretched the tape before I started, and cleaned the heads frequently during the process. The result was remarkably clean considering the fact that I was not using a production-quality editing deck.

From One to Another

While the MediaRecorder program uses only one deck, the MediaProcessor software controls two devices and lets you edit from one to the other. The editing process involves creating a database of scenes—with starting and ending points on the source tape—and from it, producing a list of scenes to be copied to the destination tape and the order in which they are to appear. The MediaProcessor software then does the transfer automatically.

Creating a database is relatively simple. You synchronize the software with the source deck's counter, and then roll the tape. When you see a scene you want to include, stop the tape, record a name for the scene and the start count, and resume viewing. When the scene is over, stop the tape again and enter the end count.

From your finished database, you create the edit list. By altering the sequence of some scenes and by excluding others, you determine the order of scenes and the content of the final tape. You can also insert IFF file names into the edit list and indicate a recording duration for them.

While MediaPhile does not allow the



Editing your film is easy.

editing of two tapes into one, I got around this limitation by editing one source onto the destination tape and then, without rewinding the latter, editing a second source tape. I then used the former destination tape as my new source, in effect editing the two source tapes. Of course I added a generation in the process, but this is not a great problem with 8mm decks. The results I obtained were more than satisfactory for home and light-commercial use.

Be In My Show

The MediaPhile system is a bit rough around the edges. The software is written in compiled BASIC and it shows in the fairly crude and sometimes-confusing interface. According to Interactive MicroSystems, a major rewrite in C is underway. The documentation is poorly written, and offers inadequate explanations.

You will not get broadcast-quality results with MediaPhile, but the system delivers many of the capabilities of high-end video editing-and-production systems. It performs best with better decks ►



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such as the Sony 8mm and JVC SVHS systems. I know of no other system on any computer that offers the capabilities of MediaPhile at a comparable price.

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A.M.A.S.

Audio sampler? Make mine MIDI.

By Stephen Quinzi

LIKE MANY OTHER products of its kind, the Advanced MIDI Amiga Sampler (A.M.A.S.) package consists of a hardware sound digitizer and sample-editing software. What makes A.M.A.S. different is that it is directly addressable through MIDI (Musical Instrument Digital Interface). At last, you can sample, edit, and replay sounds from a MIDI keyboard with the same package. To make things even easier, a MIDI interface is built into the sampler.

The A.M.A.S. hardware, a four-by-five-inch wedge-shaped box, has two ribbon cables. One connects the stereo digitizer to the Amiga's parallel port, the other joins the MIDI interface to the serial port. For audio input, there are a pair of RCA jacks and a single mini jack. Because there are no level attenuators, it is important that your sound source be low level and volume controllable. The manual suggests you use your home stereo's headphone output. You can attain higher quality samples, however, by taking the line out from a compact-disc or cassette player (the output that leads to an amplifier—not the speaker jacks) and using an audio mixer to cut down the signal before sending it to the digitizer.

Through the software, you capture and edit samples and access the MIDI features. The program runs comfortably with 512K, but as with any such memory-intensive application, more is better.

Looking On

The A.M.A.S. screen resembles a hardware recording device: You control the program via buttons. Stacked together at the top of the display are two waveform windows that graphically depict the right and left samples representing stereo sound. On either side of the screen, two other windows act as real-time oscilloscopes to display incoming sample data. Each of these has an overload indicator that lights up if the incoming signal is too high, a control to magnify the data, and a Freeze button that grabs a waveform for static display. Just below are sliders that govern playback volume of each of the Amiga's four sound channels.

In the center of the screen is a box with basic controls, including Play and Record buttons, gadgets that scroll the samples backward and forward, and switches that let you work in stereo, or on either the right or left sample. You will also find here a MIDI-activating control, and a slider with which you regulate sample-playback speed. Across the bottom of the screen are a number of gadgets for the various editing functions. Most of these are depicted by graphics—some more intelligible than others.

On the right side of the screen is a bar-graph symbol; clicking it changes the sample-display area into a real-time frequency analyzer. This tool is akin to the spectrum analyzers sound engineers use to set equalization curves. It calculates the harmonic content of an audio signal and displays it as a set of isolated frequency ranges (100 Hz, 500 Hz, and 1, 2, 3, 4, and 5.5 KHz) represented by vertical bars on a graph. As a signal's harmonic content changes, the bars move up and down. The analyzer seems fairly accurate.

Listening In

Sampling with A.M.A.S. begins with plugging a sound source into one (or two, if you are sampling in stereo) of the digitizer's outputs. The incoming signal is displayed in the oscilloscopes. (It is best to set the source's volume high enough so that the wave fills the display, but not so high as to cause flat spots at its peaks.) Clicking the Record button tells A.M.A.S. to digitize the sound. The Auto Record feature starts the sampling ►

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☐ **#131 PacMan '87** - Great sound and graphics. Adds new elements to PacMan. Saves Top 10.
☐ **#127 Wheel of Fortune** - A great computer version for multiple players. It even talks.
☐ **#23 Monopoly** - Enjoy great graphics and sound while playing three tough computer opponents.
☐ **#37 Business Programs** - Included are an address book, an amortization program, a talking mail manager, and a label printer.
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☐ **#140 Virus Killer** - Everyone needs this! Makes it easy to detect and eliminate known viruses.
☐ **#115 Word Processor** - Lots of features.
☐ **#134 Applications** - Label maker/printer, grocery list maker, and AMIGazer - a star viewing program.
☐ **#142 Q-Bert** - Like the popular arcade version.
☐ **#139 Bull Run** - Great Civil War strategy board game, with impressive graphics and sound.

THE BEST OF THE REST

BUSINESS/HOME

☐ **#116 Business II** - VC-Spreadsheet, HP-10c calculator, and several diversions for when the boss isn't looking!
☐ **#117 Business III** - DataBase, a bunch of great new fonts, RSLClock-great clock utility, AmigaSpell.

LANGUAGES

☐ **#9 FORTH** - Two versions of the FORTH programming language.
☐ **#50 XLISP** - A version of LISP, the artificial intelligence language. Includes documentation.

COMMUNICATIONS

☐ **#4 Communications** - Starterm and Aterm are both included. Both run from Workbench or CLI and are comparable to communications packages selling for $50+. Full control of baud rates, phone directory, all protocols, auto chop of files, and many other extras. Works well with the Avatex 1200 modem and others. Source code included.
☐ **#90 Modem Madness!** - Terminals include StarTerm, ATerm, and Kermit. Telecommunication utilities such as Archive are also here. Other types of programs and utilities are also included in the price of admission.

UTILITIES/APPLICATIONS

☐ **#60 AmigaBasic** - Two programs that are truly of commercial quality, Cell-Animate and Graphit. Some Deluxe Paint picture files are also included.
☐ **#97 Tutorial Disk1** - A disk full of information and programs to instruct Amiga Programmers and users. Several C & ASM source files are included.
☐ **#98 Tutorial Disk2** - More of the best of Amiga Information.
☐ **#101 Utilities** - Many new utilities like Timeset - a time setting utility and DirCopy-a great copier (very quick), and about a dozen more. Some new fonts are also included on this disk.
☐ **#105 Potpourri I** - This disk contains several different kinds of programs, some of the highlights are: PopCLI2-evokes a new CLI window at the press of a button; PSound-sample sound recorder and editor; 3-D Breakout; DiskCat-catalogs and organizes disk files; IconMaker-makes icons for most programs so that they can run from Workbench; FKey-template maker.
☐ **#129 Amiga Utilities II** - A hard disk backup; Target-sounds a gunshot whenever the left mouse button is pressed; Dpaint Tutor; WinSize-change window size from CLI easily, and lots more.
☐ **#130 Videomaker Utilities** - This disk is packed with utilities to make your desktop videos easier to produce and more professional looking.

☐ **#133 DOS Helper** - A program designed to help you with the AmigaDOS commands. Can be activated from icon of the CLI. Supports multitasking, so that you can refer to it when you need it. As usual, there are other good programs included on the disk.
☐ **#135 Applications II** - Long Movie-plays several IFF pictures in fast succession, creating animation. QuickBase-a mail manager DBase. Persmait-a DataBase for keeping records of friends, family, associates, customers or employees. MORE.
☐ **#146 Calendar** - A very good personal calender for birthdays, holidays, meetings, bills and other events. Excellent graphics. Calendar program also has a diary. Other programs include some graphics and Checkbook.
☐ **#150 Textcraft+ Demo** - A demo of a very good word-processing program of high quality. Menu driven. Has a lot of helps to show you how. Textcraft+ also has a Speller Check available.

SOUND/MUSIC

☐ **#18 Future Sound Demo** - Another great sound demo of digitized sound. Includes the wicked witch of OZ, breaking dishes, sea gulls, car crash, ducks, others.
☐ **#30 Super Sounds** - Great digitized sounds from movies like Star Trek, 2001, James Bond movies, Star Wars, and Starman, Is it real or is it the Amiga?!!!
☐ **#77 Instruments** - Turn your keyboard into 25 different musical instruments.

SLIDE SHOWS

☐ **#1 Norman Rockwell** - 17 beautiful digitized Rockwell paintings in this self-running slideshow presentation. You've got to see these!
☐ **#55 EA Demo and Polyscope** - More great graphics for your enjoyment.
☐ **#67 DPSlide8** - Over 30 slides of all sorts on this self-running slideshow.
☐ **#94 Diga-View** - This one shows the digitizing process in stages. Several good pictures are included. Other programs also included.
☐ **#95 DigaSlide11** - Another in the great series of slideshows with great artwork. Self-running with over 25 pictures.
☐ **#108B Juggler** - Famous demo that shows the beautiful graphics of the Amiga and just how powerful this program is. It is easier to run than 108A, but only has the one demo on it.

GAMES

☐ **#38 Basic GrabBag2** - Around 25 programs of various types. Many of these are must-haves. At less than $.20 each, you can't go wrong!
☐ **#44 Games3** - More great games including Life, Vegas Slot Machine, Reversi, others.

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☐ **#118 Great Graphic Games** - Includes Missle Command, 2-D Triclops, Cosmo-asteroids clone, BrakeOut, Yatzee, Hack and more.
☐ **#121 Backgammon** - A great game from David Addison.
☐ **#122 Solitaire** - Two versions by David Addison.
☐ **#123 Cribbage** - Take on the computer or a friend.
☐ **#124 Milestone** - A great computer version of Miles Bournes by the author of Monopoly for the Amiga, David Addison.
☐ **#125 Othello** - A great 3-D version of this popular game.
☐ **#128 Space Games** - Cosmoroids (like asteroids) and Gravity Wars highlight this disk just full of games.
☐ **#137 Blackjack** - A full-featured game which allows pair-splitting, double-down, etc. Bandit-play the slot machines without going to Vegas!!! More.
☐ **#141 Dominoes** - Dominoes game with great graphics. Also Tic Tac Toe, Drawing and Molecules programs.
☐ **#147 Jackland/Graphics** - Adventure clue game. Also some great pictures (graphics), a useful utility called Quickbase, and a fun program called Thingies which you will enjoy!!!
☐ **#148 Boulder Dash** - Very popular game with excellent graphics and has several challenging levels. This disk is full- It has Othello, Life3 and many useful utilities.
☐ **#151 4 in a Row** - A fun, but challenging game you play against the computer. There is an excellent Demo "MandFXP-D3", a utility or 2 and the fun TARGET - A weirdo thingy.

MISCELLANEOUS

☐ **#88 Amiga Basic Programs** - Over 50. Games, utilities, applications, entertainment, and finance. Also included is a program that allows you to use IFF files in your Amiga Basic programs.
☐ **#119 mCAD** - A full-featured computer-aided design program.
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process when the incoming signal reaches a specified level. Once you have begun to record, the waveform appears in the sample-display window and it is ready for editing.

Editing must take place within boundaries defined by Pointers—vertical green lines you can drag through the sample display and place at selected locations. Editing functions include Cut, Copy, Mix, Reverse, and Increase/Decrease Volume, which differs from the playback volume sliders in that it actually recalculates the data. You can swap and mix portions of data between channels. A Bounce function lets you copy a mono sample to both channels and introduce some crossfade effects to emulate a stereo image.

You can fade sections of data by selecting the Fade In or Fade Out buttons. Because the angle of fade is adjustable, you can also use these as envelope generators. There is a low-pass filter with two settings (¼ and ½) that you can apply to areas of the sample. You can compress portions of a sample by 25%, 50%, or 75% via the Shrink button; this makes the sample smaller, lowering its fidelity and increasing playback speed.

For detailed editing, you may need to magnify an area of your sample. The Magnify button offers several degrees of enlargement. This operation lengthens the sample display, but Markers (vertical blue lines that are recalculated with each magnification) can help you keep your place.

You can save samples as mono or stereo files in either raw or single-octave IFF format. (You can load IFF samples into A.M.A.S., too).

Get Control of Your MIDI

When you activate the MIDI button, an alternate control panel appears in place of the edit functions. To the left of this panel are ten buttons representing the Amiga's function keys. You can assign samples or sections of samples to these keys and then trigger them from the Amiga keyboard. As a sample plays, you can press keys on the QWERTY keyboard to make it sound at different pitches, like a musical instrument.

There are two options for MIDI control: stereo (one note at a time) and polyphonic mono. Both let you play samples from a MIDI keyboard. The program evidently does not recognize MIDI note-offs, as each sample plays its full duration even after you release the key. You can set the program to receive on all MIDI channels (Omni mode) or on any single MIDI channel, but you cannot assign different samples to respond exclusively to separate MIDI channels. Although the documentation says that the program can split the MIDI keyboard into as many as ten zones and assign a different sample to each, I could not get this feature to work. MichTron's technical-support representative was responsive and concerned, but could not help me with this problem.

The manual contains some vague explanations, and I object to the fact that it does not differentiate between sampling and audio frequency. The documentation refers to 28K samples per second as a 28 KHz frequency; the highest possible audio frequency attainable with this sample rate would be 14 KHz. Though this usage is technically correct, it can be misleading because Hertz more commonly defines audio frequency.

The program makes no provision for true looping, a major oversight in my opinion. What it calls looping is actually a repeat function that replays the sample continually. Also, except for the Shrink function's few options, there is also no way to transpose or resample to a different frequency.

Still, A.M.A.S. has a lot going for it. The digitizer is as clean as any I have used with the Amiga, and the built-in MIDI interface is a great idea. It works with all my MIDI programs. The A.M.A.S. stereo-recording environment is both easy to use and fun to work with, and innovative features such as the spectrum analyzer set it apart from the pack. A.M.A.S. has great potential for a variety of applications.

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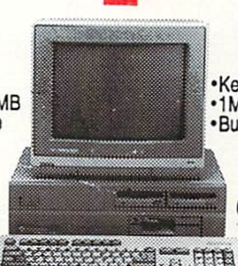


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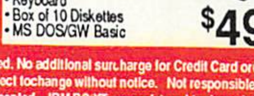
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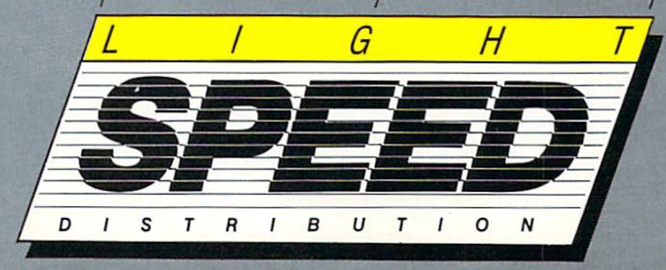
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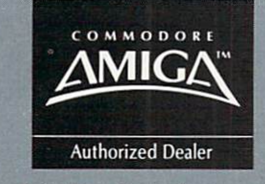
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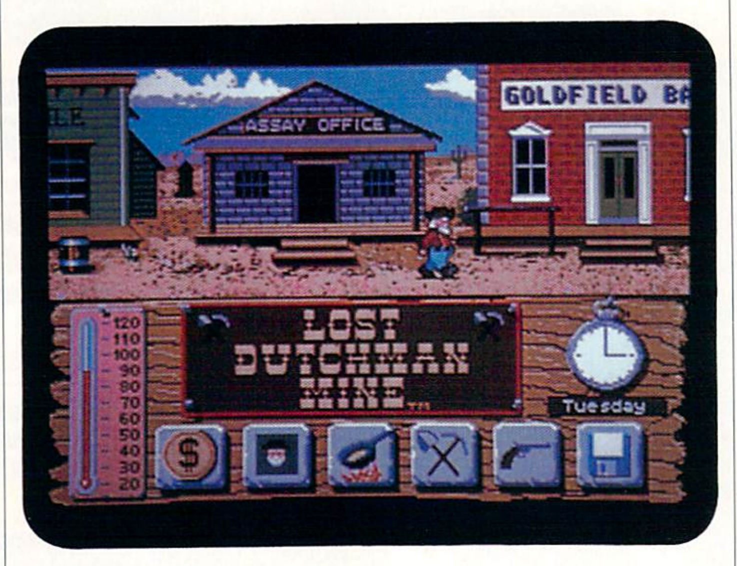
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CREATE STUDIO productions at home using film footage and computer graphics. **Scanlock VSL-1** is available in NTSC ($995) and PAL ($1095). Scanlock lets you integrate processed reference signals, such as input from a video camera or a VCR, with your Amiga's video signals. For details, contact VidTech International Inc., 2822 N.W. 79th Ave., Miami, FL 33122, 305/477-2228. Reader service number 521.

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If you lean more toward desktop publishing, try **ProFonts Volume I: Professional** for text and **ProFonts Volume II: Decorative** for ornamental fonts and borders. Each volume costs $34.95 and is designed for use with dot-matrix printers. Your publisher is New Horizons Software, PO Box 43167, Austin, TX 78745, 512/328-6650. Reader service number 537.

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IT TAKES TWO heads to meet the challenge of **Captain Fizz Meets the Blaster-Trons** ($29.95), a simultaneous, two-player game. Plan strategy, watch your partner's back, and maybe even sacrifice your life to promote your brother in arms through 22 levels. To get started, contact Psygnosis, Liverpool, UK (051-236 8818), or their US distributor, Computer Software Services, 2150 Executive Dr., Addison, IL 60101, 800/669-4912. Reader service number 522.

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IF YOU HAVE Commodore's A2088 Bridgeboard and you have access to IBM or Macintosh graphics libraries, **Graphics Transformer** will help you convert files for your Amiga. You can capture text and graphics screens from CGA, EGA, Hercules, or AT&T 6300 graphics cards. Your interpreter is IMSI, Product Support & Development, 1299 Fourth St., San Rafael, CA 94901, 415/454-9678. Reader service number 541. ►

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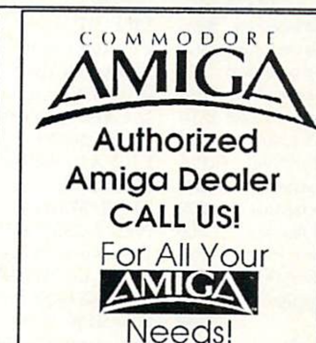
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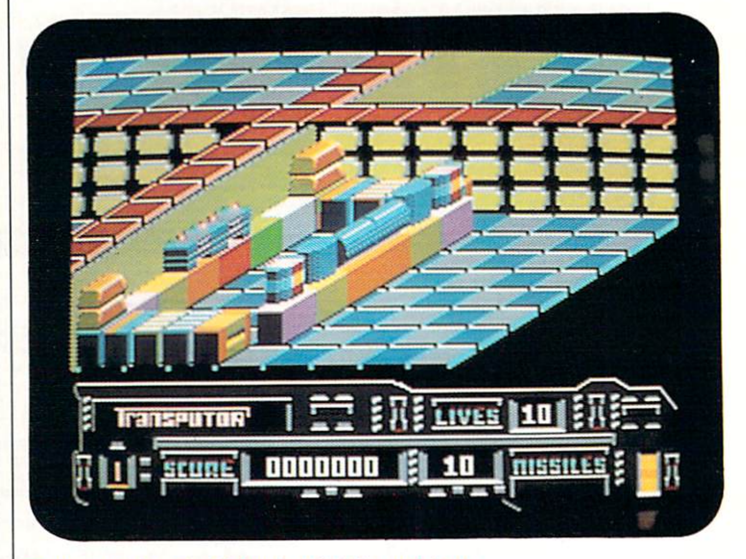
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Transputor boasts 36 levels of tricks and traps.

WILD BLUE YONDER

FIVE LEVELS OF difficulty in this game help you to learn to fly an F-16. Negotiate yo-yos, loops, and scissors, and face blackouts from pulling too many G's. **Falcon** features 3-D graphics, digitized sound effects and a black box for recording the plane's path so you can view instant replays. Your arsenal includes heat-seeking and Maverick missiles, bombs, and machine guns. The game retails at $49.95; radio in to Spectrum HoloByte, 2061 Challenger Dr., Alameda, CA 94501, 415/522-3584. Reader service number 533.

OFF THE RACK

SPRING FASHIONS FOR your workstation from Software Visions feature templates and macros in a ready-to-use format. **Designer Databases** are priced at $39 for **Home I** and $59 for **Business I**. These applications work with Software Visions' Microfiche Filer line of database managers. Home I includes catalogs for videotape, audio recordings, stamps, and recipes, while Business I offers daily-calendar, mail-merge, expense-report, general-ledger, and inventory-processing applications. Your tailor is Software Visions, PO Box 3319, Framingham, MA 01701, 508/875-1238 or 800/527-7014. Reader service number 524. ►

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Does your index finger itch for diversity? Try a three-button **Boing Mouse** on for size. You get a four-foot cable, a mirror pad, and an industry-standard, three-button interface for $125. Contact Boing, 1881 Ellwell Dr., Milpitas, CA, 408/262-1469. Reader service number 526.

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Electric Golf

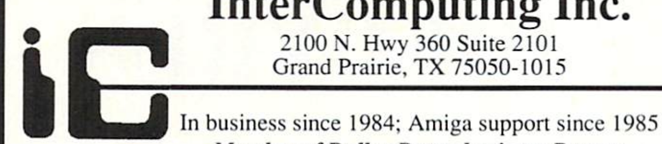
IN A BATH of flashing lights and crazy music, sink your ball in a hamburger. You're not dreaming, you're playing **Zany Golf** from Sandcastle. For $39.95, you get fireworks, moving walls, and magic carpets as well as the traditional castle and windmill. Your caddy is Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171. Reader service number 539.

Alien Avenging

YOUR FRIENDS ARE hostages, your colony is infested with hideous aliens, and you are about to be blown to bits by a time bomb in **Alien Syndrome** from Sega. The game retails for $39.95 and is distributed by Mindscape, 3444 Dundee Rd., Northbrook, IL 60062, 312/480-7667. Reader service number 525.

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HORS D'OEUVRES

Hints, tips and techniques

from your fellow Amiga users.

Single-Drive Fonts

HERE'S A TIP for single-drive users who want to use fonts with a program other than the ones already on the disk. Let's say you want to use a number of new fonts with DPaint, but you don't want to copy these fonts permanently onto your DPaint disk. If these fonts were in the FONTS directory of a disk called MYDISK, you would type:

```
MOUNT RAD:
COPY MYDISK:FONTS ALL
  TO RAD:
```

After everything is copied, rename RAD as FONTS. Then insert your DPaint disk and reboot the system. DPaint will now access these new fonts and simply ignore the ones on its own disk.

If you put the command REMRAD in your DPaint disk's C directory, you can remove the fonts from RAD and regain access to the fonts on the DPaint disk by simply typing REMRAD from the CLI, or you can rename RAD again as RAD if you don't want to lose them permanently.

Argyris Kotoulas
Berkeley, CA

Light Plot

FLATBED PLOTTERS, such as the Roland series, use a pen to draw an image onto paper. What if you replaced the pen with a tiny "grain-of-wheat" light bulb? (Crazy idea, but it gets worse.)

First, create a suitable drawing in the computer, ready for plotting. Next, mount a 35mm camera on a tripod directly over the top of your plotter, aiming down onto the drawing area. Darken the room completely. Open the camera shutter completely, switch on the light bulb (you can get "grain-of-wheat" bulbs at most hobby stores where model trains are sold), then start the plotter. If everything worked correctly, you should have a "light tracing" of your drawing on film.

The one obvious problem with this technique is that as a plotter draws, its pen arm travels back and forth at different speeds, depending on the amount of drawing that it has to do at any given spot. So, if your drawing is a mixture of simple and complicated shapes, the resulting exposure on film will vary considerably.

I'm not sure what practical applications this technique may have, but I'm sure that someone can think of something.

Dennis Nicholson
Melbourne, Australia

Amiga Graphics To MS-DOS

I WAS DELIGHTED to see information regarding graphic transfer on the Amiga. However, Mr. Lynn's tip ["IBM-Amiga Graphics Transfer," Hors d'oeuvres, Feb. '89, p. 12] using GIF for the transfer is not by any means free. CompuServe is not free, and the GIF file-conversion application from Amiga to a usable format (.TIF, HALO, or .PCX) is not an easy task.

I have been using two programs to transfer graphics to MS-DOS. I convert all my IFF images on my PC/AT by following some easy steps, and the results are perfect.

I create the IFF file in hi-res 16-color or black-and-white mode using Digi-View. I then transfer the image using DOS-2-DOS. I have a 3.5-inch drive on my PC-40. After transfer, the DOS-2-DOS file is perfectly readable on my PC/AT. I convert the IFF file into any format I want using Hijaak by Inset Systems. The many special extensions used by MS-DOS systems include .GIF, HPC, PIX, MAC, TIF, PCX, and many others. The Hijaak conversion reports the highest possible resolution based upon the hardware setup. I use VGA and am allowed hi-res file transfer to and from the Amiga-AT. I also use DeluxePaint II on my PC/AT to check file integrity.

Regarding Mr. Lynn's tip, I transfer graphic files from the Amiga only. I have no use for MS-DOS files on my Amiga!

Terry A. Churchfield
Pittsburgh, PA

Digital Monitors

I NEEDED A way to interface my Amiga 500 with an ordinary digital monitor (Commodore 1902), but I lacked the add-on that makes this possible. However, with a little improvising I was able to hook the 500 up to the monitor with a regular RCA phono plug cable and an RF adapter from a Commodore 64. You simply attach the cable from the monochrome port to the 40-column (non-RGBI) video input on the monitor. The picture is in black and white, but it will suffice as a readable display and a low-cost alternative to an analog monitor.

Robert C. Fernatt
Bomont, WV

If you have an idea you'd like to share with our readers, send it to Hors d'oeuvres, Amiga-World *Editorial, 80 Elm St., Peterborough, NH 03458. If your idea gets published, you'll receive an* AmigaWorld *surprise gift.* ■

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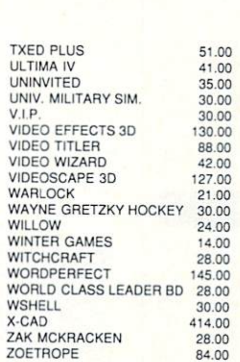
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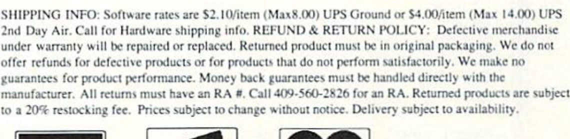
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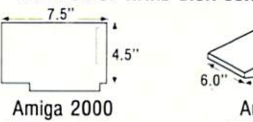
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Introduction to the Workbench and CLI.

If You:

- -are having trouble using the Workbench
- -are discouraged because a CLI doesn't obey you
- -are running programs only from the Workbench
- -are not able to run a program without an ICON
- -have not tried multitasking
- -have not used ED
- -have not modified your startup-sequence
- -have not used your RAM disk
- -are unfamiliar with the "Know Your Path" rule

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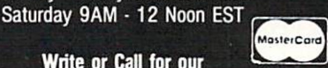
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HELP KEY

No one had a clue what to do about the dreaded Guru. Then came Lou.

By Louis R. Wallace

Executable Batch Files

Q: *To make life with my A500 easier, I have written a lot of batch files that I can run from the CLI with the command EXECUTE FILENAME, where FILENAME is the name of the batch file. Is there any sort of AmigaDOS compiler that will let me compile my batch files into executable commands that I can run from both the CLI and Workbench?*

Jay Freidmann
New York, NY

A: There isn't (as of yet, anyway) an AmigaDOS compiler, but if you have upgraded to the 1.3 version of AmigaDOS, then you don't need one. There are provisions for handling batch files in exactly the way you want for both Workbench and the CLI.

To make batch files directly executable under the CLI, you use one of the new options of the version 1.3 PROTECT command. To demonstrate, let's make a batch file that creates a background task that activates the small digital clock, then make it an executable file under the CLI.

First, using ED (or any text editor you want), create a text file called TIME with the following line:

```
RUN SYS:UTILITIES/
  CLOCK DIGITAL2
  SECONDS
```

(Be sure to enter this all on one line.) What this will do is create a task that will put a small digital clock in the upper border of your CLI window. Normally, to execute it you would type EXECUTE TIME. But, by setting the S (Script) flag (along with the Read/Write/Edit/Delete flags), there is no longer any need to use the EXECUTE command to start the file. Here's the syntax you should use:

```
PROTECT TIME RWEDS
```

The file is now a directly executable batch file than can be started by simply entering the statement TIME, either in direct mode or even from another batch file.

To run a script file from the Workbench, use the new command IconX. IconX allows you to start a batch file by clicking on a Workbench icon, just as you would a program. Again, be sure to start with a batch file that contains one or more commands, and the example above (TIME) will work just fine.

Once the batch file has been created and is on your disk, you will need to make an icon for the file. To do this, open the Workbench TOOLS directory and double click on the ICONED tool. After the icon editor loads, you will need to load a preexisting project icon, alter its appearance and then save it back with a new name. I suggest you load the CLI or SHELL icon, as they are the correct type (PROJECT).

Once the icon has been loaded, clear the frame and draw an image that pictorially represents the functionality of your new batch file, then save it back with the exact same name as the batch file (in this case TIME). Remember that you do not need to add the .INFO suffix as the icon editor does that automatically. Then exit the icon editor and go back to the Workbench.

Close your disk icon and then reopen it and you will find that the new icon you have created will be in the window. Click on it once, and then select INFO from the Workbench menu. The INFO screen will appear, displaying a variety of information about the file. Click in the Default Tool field and (using the Delete and Backspace keys) clear any existing contents of the field. Then enter the following information:

```
C:XIcon
```

and click on the save button at the bottom of the INFO window. Once the disk activity is finished you can exit the INFO display and go back to the Workbench.

At this point your new icon is fully active, and double clicking on it will activate the batch file as if it were a program and not merely a document containing instructions.

Game Backups

Q: *I find it strange that when I open the window on a game disk, there usually isn't an icon displayed for the game. What I want to do is place several different games on a single disk when I make backups. This would save me both time and disks when I want to play several games in one sitting. Where are the icons?*

Erskine Headley
Barbados, West Indies

A: Not all programs have icons. Unless they are made to be executed from the Workbench, there isn't any need for them. And in the case of a commercial game, most are not meant to be started from the Workbench. Some contain CLI commands in their startup-sequence that autostart the game on boot up, while others may completely bypass the standard AmigaDOS/ ►

Workbench and have their own custom DOS routines.

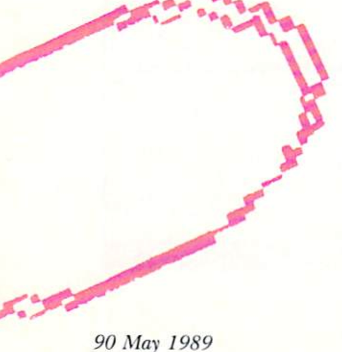
As for combining more than one game on a disk, if they are not copy protected it might be possible, but most arcade games don't allow you to make legitimate backups. And of course, some games have so much information on disk (graphics and sound files are generally *very* large) that they may fill one or more disks.

Losing Chip RAM

Q: *When I use the command BindDrivers in my startup-sequence to access my hard drive, my chip RAM drops from 232K to 160K, and I receive "Not Enough Memory" errors when working with memory-intensive graphics. How can I use my hard disk without consuming my chip RAM?*

Heurtaux Jean Francois
Senegal, West Africa

A: I suspect I know what the problem is, or at least know of one thing that could cause you to have a serious loss of chip RAM. In my startup-sequence, the very first statement is SYSTEM/FASTMEMFIRST. This command causes all software that does not explicitly require chip RAM to be placed into FAST RAM (expansion RAM). If you are not using it, or you have placed BindDrivers ahead of it in your startup-sequence, you might well experience such a chip RAM loss. I suggest that you edit your startup-sequence and add FASTMEMFIRST as the first statement in the file.



Hi-res HalfBrite

Q: *Is Extra HalfBrite mode available in high resolution? If not, why?*

Laurie Perrin
Parrsboro, N.S., Canada

A: No, it is not. Extra HalfBrite mode (as well as Hold And Modify) requires six bitplanes of screen memory. Current Amiga graphics hardware does not allow more than four bitplanes when using high resolution (640 bits wide) screens. You can use Interlace mode (400 scanlines high on an NTSC display) with both EHB and HAM display modes.

1541 Access

Q: *Can you tell me if there is any way I can use my Commodore 1541 disk drive on my Amiga to store backups of my Amiga games?*

Wayne Hasehine
Salem, NH

A: As a matter of fact, it is possible. The product you need is called Access-64 (available for $79.95 and marketed by Progressive Peripherals). Access-64 is not a C64 emulator; rather, it is an interface that allows some standard C64 devices like the 1541 and 1571 disk drives and C64-compatible printers to be used on the Amiga. I should warn you, however, that the 1541 is incredibly slow when used on an Amiga. Even if you can live with the lack of speed, keep in mind that the 1541 is not a large-capacity drive, and many Amiga files will be far larger than the 160K the drive stores. If at all possible, I suggest you save your money and put it towards the purchase of a real Amiga disk drive. ■

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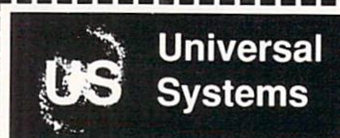
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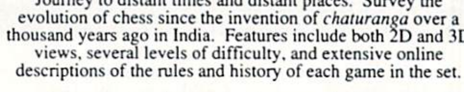
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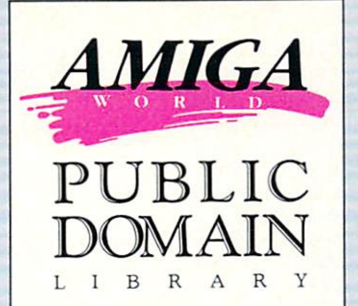
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FF 97 Juggler. Every Amiga user should have this HAM animation by Eric Graham.

FF 110 A68K. This disk features an assembler for the MC68000 and an implementation of C.

FF 142 FracGen. Generate images based upon fractal geometry. Also included are Diff and SciSubr.

FF 164 DiskSalv. An updated version of the most popular Amiga file-recovery program.

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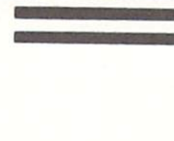
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The Power to Create

HiSoft BASIC Professional is a fully-integrated compiler and editor that makes it easy to convert all your AmigaBASIC programs into fast-running machine code; in fact, it is so simple and quick to use that you will soon find that you no longer need the AmigaBASIC interpreter, you can do everything you want with **HiSoft BASIC Professional.**

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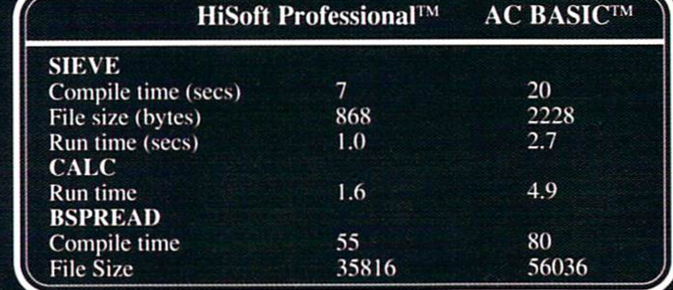
✓ Full structured programming.

✓ Optional line numbers, lots of compiler and run-time options allowing tremendous flexibility both at compile & execution time,

✓ Full recursion in sub-programs and functions plus local and global variables, arrays as parameters,

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	HiSoft Professional™	AC BASIC™
SIEVE		
Compile time (secs)	7	20
File size (bytes)	868	2228
Run time (secs)	1.0	2.7
CALC		
Run time	1.6	4.9
BSPREAD		
Compile time	55	80
File Size	35816	56036

DevPac Amiga:
The Assembler of choice

HiSoft Devpac Amiga Version 2 is the latest version of the acclaimed assembly language development tool for the Commodore Amiga. It combines a full 68000 macro assembler coupled with a full screen editor, **GenAm,** and a powerful disassembler and debugger, **MonAm**. Devpac is designed to give you maximum power and flexibility, while remaining easy to use.

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MonAm is a comprehensive, highly advanced symbolic monitor, disassembler, and debugger. It is multi-tasking, and you can set breakpoints in your code while it executes and stop runaway programs.

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